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The Effect of the Analyst-Officer Relationship on Crime Analysis: Experiential Knowledge vs. Data-Driven Decisions

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Abstract

This article examines the importance of the relationship between police officers and crime analysts in the production and application of analyst outputs. Using qualitative interview data on ten analysts and two officers from one province in Canada, we illustrate the role and responsibilities of analysts, the effects of their relations with officers on their work, as well as the intended objectivity of crime analysis within intelligence-led policing (ILP). Specifically, we analyze the use of experiential knowledge by police officers in their patrols resulting in the underutilization of analyst products. The rampant miscommunication between officers and analysts leads to a cycle of misinformation, furthering the civilian-sworn divide present in police culture. As a result, it is revealed that analysts also exert experiential knowledge and discretion within their duties. We argue analysts and officers do not differ substantially in their knowledge production, as is previously believed in existing literature. The research is important to evaluate and understand how data driven policing is occurring and the ways it can be improved in the future.

Key words: intelligence-led policing (ILP); analyst; officer; experiential knowledge; relationship; products; police culture

Crime analysis is a critical feature of the modern policing strategies. In the last two decades, there has been a shift designed to transform frontline policing (Deukmedjian, 2006). Previously, the focus was on a community-based approach comprised of reactive patrols; whereas more recently, there has been a concentration on proactive, problem-solving police practices that emphasize the importance of intelligence-led policing (ILP) strategies in an attempt to reduce crime (Innes, Fielding & Cope, 2005). The transition included the use of crime analysts (hereon in analyst) to produce intelligence to identify crime patterns and trends to better allocate police resources, rather than addressing incidents individually (Taylor, Kowalyk & Boba, 2007; Fyfe, Gundhus & Rønn, 2017). Reflecting the dominant focus on evidence based and intelligence-led policing, analysts use formulas, databases and computer systems to guild policing. The introduction of analysts to ILP has promoted reductions in crime and cost, however, has been confronted with difficulties (Piza & Feng, 2017; Taylor et al., 2007). Despite the integration of crime analysts, and their suitability to meeting policing goals such as resources allocation, objectivity and ILP, there remains tension with traditional forms of policing. A unique relationship prevails between police officers (members) and crime analysts, particularly when the analysts are civilians. ‘Cop culture’ affects the relationship between analysts and the officers, creating some barriers to communication and the ways in which analysts carry out their responsibilities (Innes et al., 2005). It has been discovered that crime analysis is critically underutilized for proactive policing as officers prefer their experiential knowledge and discretion, and thus are not employing the resources made available by analysts (Chan, 1996; Boba Santos & Taylor, 2014). It is important that the rapport between analysts and officers is positive encompassing open lines of communication and trust to ensure analysts have the

information necessary to construct actionable products that are utilized to their full potential. For this reason, their relationship should be fostered to guarantee the successful implementation of crime analysis into intelligence-led policing strategies.

The move toward an evidence-based approach has surfaced some criticism given that in some ways it displaces police discretion and experiences (Chan, 1996; Cope, 2004). Police officers often lack respect for crime analysts and their products, further promoting the sworn versus civilian divide (Evans & Kebbell, 2012). Given the importance of communication and information in crime analysis, it is imperative to understand these tensions and the impact of implementing these processes to ensure that communication is strong. In doing so, crime analysts work will be more effective and better utilized. Recent research focuses on the role of crime analysis in ILP, what makes analysts and their products most effective (Evans & Kebbell, 2012; Subhashini & Milani, 2015), how crime analysis has been integrated into police practices and its subsequent impacts (Boba Santos & Taylor, 2014; Piza & Feng, 2017), as well as the difficulties analysts face as a result of their strained relationship with the members (Cope, 2004; Innes et al., 2005; Hulnick, 2006; Fyfe et al., 2017). The existing literature recognizes police officers often lack respect for crime analysts and their products, further promoting the sworn versus civilian divide (Evans & Kebbell, 2012). To build on this work, we examine the impact of the relationship between police and analysts in this process. Does how police regard crime analysis affect the creation and use of their products?

In the current study, we examine the analyst role, responsibilities and their relationship with police officers. Using qualitative data, we focus on how crime analysts carry out their responsibilities, and if their environment and relationships with police effects their work, as well as policing practices more broadly. Our analysis shows that crime analysts can resist police

officers efforts to impose experiential knowledge in their analysis. Crime analysts privilege their approach to data decisions, however, in doing so, also impose their experience demonstrating that analytical products are a result of the context in which they were established. Analysts, similar to officers, develop experiential knowledge that affects how they create their products. Our research not only contributes to the existing, but limited research that documents the role of crime analysts, but also illustrates the use of crime analysis products in police work. The current research is important for future policy decisions regarding what role crime analysis should play in problem-oriented policing. Given the extent to which policing continues to aim to legitimize their work through crime analysis it is important to evaluate and understand how data-driven policing is occurring.

Crime Analysts and their Role in Policing: Challenges and Objectives

The Paradigm Shift in Police Practices

Police practices have undergone a shift from community-based policing to intelligence-led policing (Deukmedjian, 2006). As the threat of terrorism grew globally, police practices saw a change in priorities that better matched the concerns associated with advancing technology and the "war on terror" (Murray, 2005; Deukmedjian, 2006). Intelligence-led policing is designed to utilize data to make informed choices on what practices have been proven to work (Koziarski & Kalyal, 2020). Previously, officers were frequently involved with the public when tackling crime, whereas now with ILP, officers are encouraged to utilize crime data gathered from multiple internal sources to appropriately allocate limited police resources to reduce crime and disorder. The focus has shifted from a case-by-case approach to the overall management of risks and criminal activities (Carter & Phillips, 2013; Fyfe et al., 2017). The policing paradigm shift has demonstrated specific challenges that makes the introduction of intelligence-led policing

more difficult, including restricted budgets, limited resources to hire and train analysts, and difficulties reassigning members to initiate the ILP priorities (Ratcliffe & Guidetti, 2008; Carter & Phillips, 2013). The government is now demanding higher levels of efficiency and resource management from police services than ever before (Fyfe et al., 2017). The change in police practice has not come without resistance from police agencies and has raised the concern of whether analysts are being used to their full potential (Cope, 2004; Taylor et al., 2007; Ratcliffe & Guidetti, 2008; Boba Santos & Taylor, 2014).

Crime analysis was implemented into modern policing to methodically analyze data to develop crime patterns and trends (Agarwal, Nagpal & Sehgal, 2013; Carter & Phillips, 2013). Analysts' products are meant to be actionable by the police in an attempt to be proactive in crime reduction. In other words, crime analysts develop resources for the police to identify offenders and places that are disproportionately involved in crime (Boba Santos & Taylor, 2014). Crime analysts' intelligence products are used by a variety of law enforcement personnel (patrol officers, first-line supervisors, managers) and are designed for short (tactical), medium (strategic), and long-term (evaluation-oriented) interventions (Cope, 2004; Boba Santos & Taylor, 2014). Crime analysts regularly conduct crime maps and network charts to provide intel to police agencies. Crime maps are used to illustrate hot spots, indicating an area where a disproportionate number of crimes are being committed (Taylor et al., 2007; Boba Santos & Taylor, 2014). This technique depends heavily on GIS technologies to produce an accurate depiction of where crime clusters (Kumar & Chandrasekar, 2011; Subhashini & Milani, 2015).

Research has shown that the use and effectiveness of crime analysts' products varies. When addressing what makes a product and analyst most effective, it was found the results of an analytical product was the most important (Evans & Kebbell, 2012). In other words, an analyst

must be able to collect and distribute concise crime data for the members to act upon. Among the most important personal characteristics, the best analysts are those who can think outside of the box and can draw upon inferences (Evans & Kebbell, 2012). Being an impartial third party is a considerable component on the crime analysis position, and thus, analysts must possess the ability to piece together fragmented data into crime patterns and trends. A successful analyst is one with superior communication skills, a strong work ethic, an objective mindset, and someone who truly has a passion for intelligence work (Evans & Kebbell, 2012). As this study shows, it is believed the above characteristics are strong skills to acquire within the field of crime analysis; however, what is less clear is if any of these personal characteristics of analysts influences effective intelligence strategies in police practices. Even if crime analysts can provide meaningful information to direct policing decisions, if the products and information they provide are not regarded positively by the officers intended to use them then their impact is decreased (Evans & Kebbell, 2012). Another study examined what makes an effective analyst, identifying statistical literacy and communication skills as pertinent to crime and data analysis (Kringen, Sedelmaier & Elink-Shuurman-Laura, 2017).

Officer Responses to Crime Intelligence

Police officers continue to be critical and resistant to crime intelligence or data driven decision-making (Cope, 2004; Taylor et al., 2007; Ratcliffe & Guidetti, 2008; Boba Santos & Taylor, 2014). The tensions between police officers and analysts, some argue, are rooted in the differences in knowledge and experience of civilians and sworn personnel (Evans & Kebbell, 2012). Subject matter experts including analysts, managers of analysts, and end-users of analytical products, emphasized that an effective analyst is one who has the experience associated with being a sworn officer. Police officers view analysts are more effective if they are

able to relate to and understand the patrols of the members (Evans & Kebbell, 2012). Contradicting findings have emerged, stating that crime analysis is meant to complement and assist police work, suggesting that analysts do not need to familiarize themselves with sworn officers' experiential knowledge (Boba Santos & Taylor, 2014).

The integration of crime analysis into police agencies continues to grow. In the United States 74 percent of agencies reported having crime analysis units, however, many do not utilize crime analysis on a regular basis or to its full potential (Boba Santos & Taylor, 2014). The findings suggest that specific ranks within police agencies use crime analysis for different purposes. Patrol officers and first-line supervisors, for example, most often use tactical crime analysis, whereas management was more likely to make use of evaluation (all three personnel used strategic equally) (Boba Santos & Taylor, 2014). Despite the differences in use, one common thread that emerged was the lack of crime analysis utilization for proactive police practices at all levels (Piza & Feng, 2017). Police agencies are not augmenting their practices with the resources made available by crime analysts (Boba Santos & Taylor, 2014).

Studies also point to conflicting objectives between police officers and crime analysts as a factor in understanding why analysts' work is underutilized. After conducting interviews with crime analysts, Cope (2004) discovered that analysts felt their products were often overlooked as a result of conflicting roles. Police officers were said to prefer grounded work that is rich in context and aim to collect information by patrolling the streets. This type of policing strategy is contradictory to how crime analysts operate; their role is to systematically analyze data to direct officers and identify and target high-risk areas and offenders (Cope, 2004; Innes et al., 2005). This approach is a shift away from the traditional "gut reactions" of police officers, to a data-driven policing style (Fyfe et al., 2017). ILP challenges the culture of policing and the chain of

command, and so unsurprising, analysts' data-driven products become overlooked and they are dismissed as "silent partners" that are important in theory but not practice (Cope, 2004; Fyfe et al., 2017).

Prior to the implementation of ILP, police officers have relied upon their experiential knowledge to make arrests and manage crime (Chan, 2001; Cope, 2004). The introduction of policing strategies rooted in evidence has demanded a change in officer's judgements and actions, where they are now expected to rely on analyst data to support their patrols (Cope, 2004). This adjustment has been shown to be problematic as 'cop culture' runs deep at all levels of police personnel and bolsters conservatism, machismo, and suspicion (Cope, 2004; Caveney, Scott, Williams & Howe-Walsh, 2019). The set of beliefs, customs, and ideologies that constitute police culture precludes civilian analysts from being perceived as experts in the field of policing (Cope, 2004). The culture allows for greater discretion in police work which erodes the fundamentals of crime analysis (Chan, 1996). Officers are granted a large amount of discretion in their interventions which promotes a reliance on their own experiential knowledge rather than data-driven decisions (Chan, 1996; Cope, 2004). Experiential knowledge, or craft knowledge, is learned on the job and is often transferred from generation to generation. In the context of policing, experiential knowledge comes from years of commission and the accumulation of knowledge while working under an experienced preceptor (Fleming & Rhodes, 2017).

Additionally, police culture breeds an environment where an officer is encouraged to increase their arrests, inhibiting the progression of crime analysis (Cope, 2004). With this mentality, officers will only positively respond to intelligence that assists in arresting offenders and by default, discredits other important pieces of intel that help with the prevention of crime. It can also lead to frustration among the officers when analysts are not supplying them with details

linking offenders to arrestable crimes in the area (Chan, 2001; Cope, 2004). Police culture therefore, makes it difficult for crime analysts' work to be accepted by police officers, and arguably, officers insistence on the importance of their knowledge, can imped on the potential to produce objective products (Chan, 1996; Cope, 2004).

It is also problematic when police officers assume analysts' products are a completely objective, gospel account of crime patterns and trends. When officers do refer to analytical products for crime reduction, they often employ the information with an overemphasis on the internal validity of the products leading to issues in directed patrols (Innes et al., 2005). The quality and accuracy of analysts' products can only be as good as the information provided to them by police officers (Cope, 2004; Innes et al., 2005; Boba Santos & Taylor, 2014). Analysts are often not provided with the full picture, with officers failing to recognize the importance of transmitting all the intel related to an incident, such as victim or suspect details (Cope, 2004). The communication between officers and analysts aids in the development of coherent products with police officers as an exclusive source of primary information. When details are missing from police reports or information is withheld, analysts cannot produce an accurate product with dependable pre-emptive solutions to reduce crime (Cope, 2004; Burrell & Bull, 2011). Analysts are information translators, reviewing and interpreting data to create operational content. Limited information can create a vicious cycle; analysts outputs appear inadequate or incomplete resulting in police officers losing trust in the analyst's ability to yield an actionable product (Cope, 2004). Police culture further perpetuates the miscommunication, with officers establishing their power by halting information sharing with the analysts (Cope, 2004). The importance of up to date and complete information for analysts' outputs is reflected in other studies within crime analysis, stating that analysts are required to develop a working account of

criminal activity that is frequently based on disjointed, biased, inconsistent, or completely inaccurate raw data from various sources (Hulnick, 2006). Alternatively, officers sometimes supply too much irrelevant information that analysts must then sift through to determine what is important. Information overload can make it difficult to determine what details are truly useful for intelligence products (Innes et al., 2005). Police officers need to recognize the importance of their primary information and, with the implementation of a new policing paradigm, need to be trained to provide analysts with the correct information.

Due to differing objectives, crime analysts receive different receptions from upper management than they do police officers. Upper management aims to improve police practices through the use of data-driven scientific methods, making management more receptive to crime analysts and their work (Carter & Phillips, 2013). Officers are less responsive to analytical products because analysts are tasked with the role of producing crime prevention strategies, which collides with a large component of their role as officers (Chan, 2001). A separate study found differing results, where middle management was perceived as most resistant to ILP because of the loss of control over the officers as a result of members increased discretionary power (Koziarski & Kalyal, 2020).

Although analysts feel that police management supported their work, it was discovered that patrol officers have made no effort to support or understand the importance of their role despite analysts' efforts to understand police work (Taylor et al., 2007). In their research study, less than half of the analysts surveyed felt as though they were accepted within the police culture. Furthermore, the study addressed how analysts described officers as not making effective use of their products to investigate crimes, identify hot spots or to target repeat offenders. Police officers were identified as not understanding the work of the analysts or the

benefits of using their products to solve crimes or direct patrols (Taylor et al., 2007). Further research supports that the tension between crime analysts and police officers can seriously impact the utility and use of their products (Chan, 2001). An Australian study found that police agencies are open to technological advancements in their field if it increases efficiency, however, they are less receptive to these changes when analysts are on the receiving end of their information input (Chan, 2001). Police reluctance to incorporate crime analysis into police practices may be in part due to feelings regarding the loss of autonomy, discretionary power, and a general dismissal of their experiential knowledge (Chan, 2001; Cope, 2004). The miscommunication between the members and analysts displayed in the above studies reveals a growing reluctance for police services to introduce the notions of ILP (Chan, 2001; Cope, 2004; Taylor et al., 2007).

Multiple studies have identified job training as a solution to these concerns, however, the training would need to be applied to both analysts and police officers to engender meaningful change (Cope, 2004; Evans & Kebbell, 2012; Piza & Feng, 2017).There is a lack of formal job training among crime analysts with no standardized qualifications or certificates needed upon entry into the field, with most analysts obtaining a bachelor's degree in varying disciplines (Kringen et al., 2017). Police services have been ineffective at integrating analysts, and their skills develop largely from learning on-the-job. (Kringen et al., 2017; Piza & Feng 2017). To improve police receptivity to intelligence and analysts, training is needed for both analysts and officers. Educating both sides on the process, purpose and goals of data analysis can help moderate the disconnect between these two groups and potentially create a constructive relationship (Cope, 2004; Piza & Feng, 2017). Training for law enforcement personnel may include explaining to officers the need for analysts to support and enhance police work (Cope,

2004). Informing officers through tailored training may begin to reduce the miscommunication between analysts and the members (Deukmedjian, 2006). Conversely, intelligence personnel can receive training within program evaluation to decipher which of their products works at which level of crime prevention, strengthening the application of analysis among all levels of law enforcement (Piza & Feng, 2017). Strategic, analytical, and tactical training for crime analysts will improve their job efficiency and products and has been described as a key feature of making a more effective analyst (Evans & Kebbell, 2012).

As mentioned earlier, crime analysis is intended to improve objectivity and legitimacy to policing practices. Technological advancements in policing attempt to remove the "local" (Fleming & Rhodes, 2017) or experiential knowledge of police officers through the systematic management of crime (Chan, 2001). Despite this goal, analysts products are shaped at the discretion of those utilizing and interpreting them, primarily police officers. Regardless of their intended purpose, the way in which they are actioned by police officers alters the ability for analysts' products to remain objective (Chan, 2001). Moreover, Innes *et al.* (2005) analyzed the objectivity of crime analysis suggesting that their work is inherently subjective. An "illusion of objectivity" exists, where analyst outputs are only as objective as the data they receive from the officers (Innes et al., 2005). Analysts are tasked with preparing products that are established based on data, however, the information from officers is often incorrect, incomplete, or disjointed (Chan, 2001; Hulnick, 2006).

The current study's research fills the gaps in the literature by determining if the relationship between crime analysts and police officers affects the quality of analysts' products, and the ways in which the communication between both parties influences the use of their products within ILP.

Methodology

The Data: Semi-Structured Interviews

The current study uses data from twelve semi-structured interviews that focuses on understanding the role and responsibilities of crime analysts within their respective police organizations. The questions asked examined crime analysts' work relationship with police officers (and other legal actors), their job responsibilities, and their data resources. The interviews identified what types of products crime analysts' produce, which includes analyzing offender profiles, prolific offender lists and hot spot analysis. The interviews also asked about the process of completing these tasks.

The Participants

The interview participants consisted of ten crime analysts, plus two male police officers who engage in crime analysis strategies, in provincial, municipal and federal police agencies in one Canadian province (to remain anonymous). Among the analysts, six worked for the provincial police forces, while the others were employed federally or municipally. Six of the analysts were female, the other four were male. Of these ten analysts, eight reported having completed an undergraduate degree, with more than half also having received a master's degree in a variety of disciplines. More than fifty percent of the analysts interviewed had some sort of prior work experience in analysis or the criminal justice system. Prior to and during the interviews, the participants were made aware of their role, as well as their right to withdraw their participation or statements at any time. Consistent with the current literature (Piza & Feng, 2017), most of the analysts received no formal training prior to their employment in analysis, but rather developed relevant skills while on-the-job.

Coding and Themes

The interviews were transcribed by the first author and a research team using QSR NVivo software to help compile and organize the interview content. Subsequently, NVivo was used again by the second author to thematically code and analyze the interviews for the analysis. Three main themes emerged from the data; "analyst job role and responsibilities", "analyst-officer relationships – resistance and reluctance", and the "objective-subjective divide of crime analysis". After establishing the core themes, a number of smaller codes prevailed. The first theme concerning analyst job duties was further broken into the following subthemes; i) specific everyday tasks of the analysts interviewed, ii) the ways in which their products are designed to assist policing, and iii) the research component of the job. The second theme, analyst-officer relationships, was further organized into the subthemes i) resistance and reluctance, ii) the analysts' responses to officers, iii) the levels of discretion provided to officers and analysts, as well as iv) the miscommunication between police and analysts. The final objective-subjective theme delved into the objective measures used to try and assist analysts in their efforts to remain impartial and the development of experiential knowledge.

The second author coded the data using both an inductive and deductive approach; beginning with a broad research query on the literature surrounding crime analysis and followed by an in-depth examination of the interview data to develop the main themes. From there, the research questions were established and used to navigate the rest of the relevant literature and support the development of further ideas. Although qualitative research often uses an exclusively inductive approach, the current research study utilized both an inductive (bottom up) and deductive (top down) research approach with more reliance on the inductive method (Soiferman, 2010). An inductive approach requires the themes to emerge from the interview data itself, while

a deductive approach works with guidance from a brief review of the previous literature (Soiferman, 2010). The inductive-deductive methodology was best suited because it reduced biases when coding. The literature was used to support the emerging themes. The first author also coded and reviewed the themes found in the interviews to ensure the topics developed were supported by the interview data, ensuring the internal validity of the current research study.

Suitability of Methodology

A wide range of the existing literature on crime analysis uses both quantitative and qualitative research methods. For the current research study, qualitative interview data was the most appropriate method for the research as they were able to delve into the subjective understandings of crime analysis and its role within police practices. Analogously, semi-structured interviews were the most favourable method for the research as it provides an opportunity to code for subjective themes from the crime analysts' point of view such as job roles and responsibilities, the relationship between analysts and officers, and the objective-subjective components of crime analysis. Semi-structured interviews allowed for a unique data analysis that could not be established by using quantitative methods such as surveys (Boba Santos & Taylor, 2014; Piza & Feng, 2017), while simultaneously introducing novel information which has not been shown in previous qualitative research. To date, a majority of the data on crime analysis has been quantitative, and the previous qualitative data has been centered around the point of view of police officers or has compared both police officer and crime analyst interviews (Cope, 2004; Evans & Kebbell, 2012). An understanding of crime analysts' roles from the perspective of analysts themselves will prove beneficial in establishing whether their job and thus, their products, are truly objective.

The remainder of this article examines the role of crime analysts, as well as how the relationship between police officers and analysts shapes the construction and use of analytical products and the implications this has on ILP strategies. The study concludes by juxtaposing the knowledge types of analysts and officers, examining the ways they both exert experiential knowledge.

Factors Affecting the Efficacy of Crime Analysis

Theme: Analyst Job Role and Responsibilities

Serving Officers: Providing information, support and help

Crime analysts are able to fulfill their responsibilities given their knowledge of the crime in their area/district. In the interviews, analysts commonly state that that their shifts begin with reviewing the activities of the evening or days before. Clare, an analyst, states "I review files in my region every morning and I put those of interest aside". Crime analysts regularly review the files with the purpose of converging data into trends and patterns, as another analyst notes:

> We are sitting from the top looking down and looking at all the files, so you have teams, there's stuff that happens they don't necessarily know that it's happening. They may not be monitoring it either, we are able to catch the stuff sometimes before the data even gets to them. (Nina)

Similarly, an analyst demonstrates the significance of reviewing the daily files:

> I need to assist the operation on a daily basis to analyze whatever comes. Sometimes in a week there is usually nothing to analyze but we need to do the work every morning when I come in I read all the files. I need to do it because after 2-3 days then you realize, 'oh I had just one break and enter there, following day 1 break and enter.' (Thomas)

The process of reviewing the files, involves identifying

> …any offenders that come up often or that are active I kind of make note of it. If I notice that there is a crime series going on I do analysis on the crime series. I'll look at all the file details, I'll see if their MO (missit operendus) is similar from one file to another. If it is, then we can safely say it is a crime series and probably the same offender would be responsible for all the crimes, especially if it is in the same geographic area. I'll put all the crimes on a map and I will look at that as well. (Clare)

Crime analysts' main task is to provide police officers with information pertinent to their patrols to ensure officers are able to efficiently carry out their duties. By reviewing the files and keeping up to date on crime in their area, analysts are able to translate their knowledge into actionable products for the officers.

Generating Actionable Products: Analysis tactics and strategies

Crime analysts have several responsibilities that center on the collation and analysis of information to direct the allocation of police resources. Some of their responsibilities include producing timelines for major crime in the area, computing statistics on crime trends for community meetings, and acting as a liaison between the police department and community partners, such as probation services. Analysts are often required to track the allotment of police resources to make a proposal for future funding for the department. An analyst familiar with administrative work commented, "[analysts are] called upon to justify or make a case for more funding for the force by saying things like, 'Well, there were this many calls for service last year, and we only had this many officers, they each spent X amount of time out there: it's not enough'" (Audrey). The job description for crime analysis can become blurred and uncertain in some circumstances, with one analyst explaining that "often, no one really knows what the analyst is supposed to do, so you get these requests from all these different kinds of areas coming at you and just trying to figure out, 'Ok, exactly which thing here am I supposed to be focusing on'" (Audrey). The lack of clarity analysts hold regarding their responsibilities suggests they are not well integrated in police services, promoting a strained relationship between analysts and officers. The boundaries of collaboration between analysts and officers becomes blurred as a result of the ambiguous job description.

The majority of interviewees identified analyzing crime series in their district over an extended period of time as a fundamental component of their job responsibilities; "… doing crime analysis, so that includes crime mapping, crime forecasting [events], identifying any trends or series in crimes" (Eileen). Another analyst emphasized:

> A big part of my job is to do crime mapping so show in our city mainly the property crimes, thefts from motor vehicles, breaks and enters and mischiefs to map that and show where our hot spots are in the city. (Sara)

Reflecting these descriptions, hotspot analysis is identified as a useful tool to direct police patrols to areas characterized by a high number of incidents:

> [If] we've had a real hot spot of break and enters, I'll print them out a map or whatever and provide that to them so that if they're wondering whether to turn left or turn right when they leave the detachment, hopefully that b and e hotspot will encourage them to turn right. (Keith)

Crime mapping and hot spot analysis products are vital in directing patrols in an effort to be more cost effective by better utilizing limited police resources. Crime analysts' familiarity with criminal activity, such as who is released and what crimes have occurred, allows them to develop analytical products and offer data driven decisions to inform police officers of potential risks in their district. As an analyst explains, "for the most part I provide support to all the divisions-Patrol, Investigations-in a variety of ways: With data analysis, provide information about crime pattern series, emerging trends, hot spots for directed patrols" (Audrey). Crime analysts offer police officers' support by informing police officers of risks to direct patrol initiatives to prevent future crime.

The information and products analysts develop for officers are supported by research. The interviews revealed that analysts, in an attempt to legitimize their work, often reference studies to establish evidence that supports their analytical products. This practice is used as a way to promote the tools they share with management and police officers:

> Hot spot policing is another big one because that's something that I want to see the officers do a little bit more of. And in order to justify that, I have to have research to back it up that shows, 'Look, all these studies show that this works to help reduce crime, so let's do it.' (Audrey)

To encourage the use and quality of their work, crime analysts attempt to demonstrate how their products are an accurate portrayal of crime patterns and trends. Reiterating the role of research in completing their job, but also convincing officers, the analyst states:

> I'm right now trying to work with some of the Loss Prevention officers to come up with a shoplifting prevention program. So, I go into the literature and see the research that has been done on what works and what doesn't. Things that have been empirically validated. It just helps me to know what to propose when I'm trying to develop something here. (Audrey)

By using relevant and current scientific research, analysts illustrate the value and legitimacy of their approach, while maintaining a commitment to objectivity.

During the interviews, analysts expressed the concern that officers are disregarding the intelligence analysts provide, and how this effects their ability to assist in the prevention and reduction of crime. One analyst recalls an incident where their information was overlooked by the members that later was proven to be beneficial:

> I had looked at the pattern and we had an operational briefing five weeks ago so we talked about this series that was going on and I said listen, what's going on right now based on this is I can tell you it's going to happen either on a Wednesday or on a Friday and it's going to happen during the daytime and I'm telling you it's probably going to be this vehicle that's going to be in the area which was this guy's vehicle and so long weekend came, I left the Friday afternoon, came back the Tuesday starting reviewing the files, cause we review all the files, I got to the fifth file of about 103, […] and I had a break and enter in that community where there was a series of break and enters. It was during the daytime, it was on a Friday and it was the darn guy's car in the driveway, so I was three for three, so yes, I did say I told you so then. (Nina)

Crime analysts not only struggle to encourage police officers to provide them with the information required to properly produce their products, but they also face difficulty with having their products utilized to their full potential.

Theme: Analyst-Officer Relationships – Resistance and Reluctance

Civilian-Officer Divide: Empirical versus experiential knowledge

Tension was revealed when examining the analysts' perspectives on their relationship with officers and how the products and advice they provide is perceived. One analyst describes their experience when presenting the members with intelligence, for example a prolific offender list, they note:

> I came in more into where people were a little more jaded phase I think, a little more reluctant, a little more cynical. […] there's been a resistance, in particular, to the whole crime reduction piece cause it's a four-pronged approach right, and prolific offenders being one of them. There is some resistance […] I'd put some people on that list and they'd go why are those people there, it doesn't make sense like this guy is just a chronic drunk or this guy is…yes, but they are generating calls and it's based on call volume, so there was a lot of things that, yes, there was resistance. (Nina)

Police officers resistance to crime analysts' prolific offender lists illustrates a tension between different forms of knowledge. The data-driven decisions generated from crime analysts, according to police, is inferior to the officers' experiential knowledge. Police officers feel as though their experience outweighs the knowledge formulated by the analysts. As one analyst suggests:

> The first time that offenders were actually identified as, these were active offenders list, actively go after them. After a while the offenders were repeated so much that they know who is prolific other than the curfew there is not much proactiveness that they can do to get them unless they do surveillance or something but if there is no information coming in suggesting that they are committing a crime there is no surveillance that needs to be done. Now they just kind of, well my impression is that they open the list and see the faces and say oh yeah, okay and move on. (Clare)

Crime analysts grapple with issues of acceptance by police officers and have often been confronted with resistance when attempting to have their products recognized (Cope, 2004). The analysts interviewed illustrated the existence of an officer-civilian divide within the police departments that has had consequences for the efficacy of their products. A civilian analyst discusses their experience when interacting with police personnel:

> … if you identify to higher-ups that there's a certain problem, sometimes they're less likely to take that seriously if it's coming from a civilian because they're the police officers. […]. There is a bit of that divide between the uniform and the civilian within the police agency. (Audrey)

The resistance crime analysts encounter stems from a distinction officers make between the value of their knowledge and that of the crime analysts. As a civilian, crime analysts do not have hands on experience with crime which impacts the respect towards, and use police have, for analyst‘s products. Police officers respect experiential knowledge and prioritize this information over data-driven intelligence (what analysts provide) to direct their patrols and policing decisions. It is then not shocking that officers often rely on their experiential knowledge to respond to calls rather than use the products developed for them by analysts. A distinguishing feature between analysts and police lies in their methodological approach. Analysts products are a result of data analysis, which removes personal knowledge, bias and personal feeling one might have toward an offender or crime type. Although, officers acknowledge analysts' input, they ultimately rely on their police intuition; "honestly they have no method or anything. They usually ask me who I think and they don't generally listen to that. But they ask me what I think and then they'll decide" (Eileen). Analysts are consulted on their expertise, but their knowledge remains inferior to that of the officers. Even though crime analysts are aware of police resistance to their methods, they stand by their approach to decision-making by asserting their positions when deciding on the recommendations.

Another analyst describes similar resistance from police officers. She describes how in some of her encounters with officers, they ignore her advice, or follow the directions that her products/outputs suggest. She shares a particular instance where she encountered police resistance. She states:

> … being able to stand your ground and communicate that and not get overwhelmed or to feel like they aren't listening to you, it's just their instincts, they are going with what they

> are seeing and hearing too, and they are hearing all kinds of different stuff. They don't have the benefit of necessarily seeing all the files or all the districts we are and we're looking at, you know, we have databases they don't have access too as well, so. (Nina)

Police officers may not be as receptive to analyst intelligence, and for analysts it is because they are often unfamiliar with the techniques and data that analyst's use to produce their final reports. Officers are aware of only a fraction of the intelligence that analysts receive and draw on.

Police officers prioritization of their experiential knowledge justifies making decisions based on their personal knowledge rather than utilizing help from the analysts. One of the police officers offered their perspective on the experiential knowledge exemplified by officers in the district, stating that "every cop in the city knows exactly [who the offender is], because they see it three times a day in briefing, they know exactly who it is" (Connie). Officers understand their familiarity with offenders in their area to be the best source of information to guide their decisions, leading to biased patrols.

The scepticism the analysts describe is often a result of a member's experiential knowledge that comes with years of policing. Police value their experience and interactions with offenders in making risk assessments. When crime analysts' assessment of risk of identified offenders does not reflect the members assessments, officers are likely to resist the information provided. Similarly, analysts are often misunderstood in their role and some members are unaware of what it is that their job entails.

Police officers frequently ask questions concerning the analysts' role within police practices, and question whether their products are truly relevant. The members are often concerned with the quality of the products provided to them by analysts. An analyst mentioned a discussion they often have with officers in an effort to legitimize their products, more specifically their prolific offender lists:

> One day I was in the district where there was no prolific offenders so I would do a list and I would give it to the Sergeant and the Corporal and they would just shake their head and go these people aren't causing harm. Like, where's this guy, where's this guy, where's this guy? Well, he's not in, you're not arresting him, so like there's always these long discussions about well, why isn't he here, well okay, here's why we have these people on the list so let's try to figure out why he's not here. So, a lot of that, there's a lot of questioning as to where certain players are. (Nina)

Similarly, another member reiterates:

> Members are asking, why is he not on the list, you put that guy on the list that's been quiet for three months, he's only had three calls relating to him and you're going to put the other one…no he don't have a criminal record yet. (Thomas)

Officers question the offenders that crime analysts identify as risky based on their own knowledge. Their decision to question the crime analysts is rooted in their belief that their hands-on experience (on the streets) is more accurate than data-driven decisions. Despite analysts being challenged by the officers, they still acknowledge that the officers are well-informed of the active offenders. One analyst explains, "The officers have a really good feel of which people are being active" (Sara). It is well known among both the officers and analysts that the officers have their form of knowledge that has its own merit.

Analysts not only experience resistance from officers, but they are also presented with challenges at other levels of law enforcement including management ("the brass"). The brass outlines their expectations for police officers, but this usually stands in stark contrast to what the analysts require from officers to put together comprehensive data-driven products. The framework of the police mandate can create a barrier between what the officers are expected to do and the information they are then able to deliver to analysts, furthering the divide between civilians and uniformed officers. An analyst with a background in policing describes the nature of this exchange:

> Having to fight that all the time with them [police officers], yes, I know I get it, management says this and they want this, but this is what I want, this is super important for me and this is how it is and to try to, not to cultivate, but to try to mold that relationship so that they see

> value in taking the time to do it although they have this feeling that it's just a bunch of political wording. (Nina)

The expectations from management must be aligned with the needs of analysts to ensure proper intel gathering and the promotion of a constructive relationship.

Justifying Their Positions: Analysts' response to officers

One way analysts' deal with scepticism from police officers is by providing justification for their decisions. The analysts interviewed commonly reported they "always have to justify what [they're] doing." (Warren). One analyst describes their typical response involving the breaking down of their decisions by explaining the methods they use, and how it produces objective assessments of risk. The analyst explains that in some cases when he presents a list of offenders that have been released to monitor (known as prolific offenders), police officers question their selections. He explains:

> I have to justify it [who is high risk offender) to them sometimes, I explain to them [police officers] the methodology and what criteria I have to fit and why I either couldn't make them, like for example, we have some offenders they were really really really busy the last three months but they have no convictions yet. So I tell them I can't put them because they don't have that many convictions, they could be deemed not guilty in all those trials or I can't justify it. (Yusuf)

Crime analysts' justification to officers involves details of their methods and making a distinction between offenders that have been a nuance for officers and those with a high number of convictions (a key component to prolific offender identification). Police scepticism has also resulted in the close watch of analysts, which includes examining their queries and actions for validity. As an analyst explains, "every time I query somebody I have to give a reason why. Everything's monitored. Sometimes I will get calls; 'Why did you look into this person? Why did you...?' You always have to justify what you're doing" (Thomas). Analysts are commonly

confronted by police officers that question their approach, specifically if they feel that their recommendations do not represent their experiential knowledge.

Despite the resistance from police officers, analysts assert their positions and the analysis that they produce. As an analyst explains how they justify and account for the offenders they place on the prolific offender list:

> If Joe can't make the list based on the methodology of the list, no, there is no changing the list. […] If they don't make the average or don't make the cut they're not going to just superficially make it because Constable so and so said that they should be on there. (Nina).

This analyst illustrates a commitment to the methods and analytic approach to policing practices. Crime analysts hold their ground and believe in the outputs they produce. Their belief in their methods is reason to resist officer critiques and suggestions.

The lack of resources for police officers to engage with the analysts' products may be partially to blame for the miscommunication between the officers and analysts, where the lack of time and money for officers to focus on the information necessary for analysts to do their job may lead to poorer products and a cyclical pattern of disconnect. The analysts identified a lack of resources as an issue when asking officers to act on analytical products. One analyst epitomised this recurring dilemma:

> … there is something missing in the strategy – what's missing in the strategy is equipping the front-line members or equipping the team with the tools in order to enforce what the science is giving us. I can contribute a list, or I can produce a list and provide it and identify but if we do nothing about those people then the list is obsolete. (Nina)

The organizational structure must match the sources of information output offered, meaning the police service needs to recognize the strengths of crime analysis and properly allocate resources and manpower to support the science. This has been a commonly identified issue since the implementation of ILP (Ratcliffe & Guidetti, 2008).

Different Rules: Levels of discretion and accountability

The disagreement between officers and analysts may stem from the level of autonomy provided to constituents of these positions. The ability to practice discretion in these two positions differs greatly, with police officers provided far more leniency. As one police officer disclosed in their interview, members are granted far more discretion when carrying out their responsibilities and are monitored less than analysts appear to be:

> The reason I say that and probably one of the reasons that we've had the level of success that we've had is because we haven't been over supervised, it's been very important for us to find the right people that are motivated, need little supervision who in turn are given the autonomy to do their job. I tell them, if its ethical, moral you know go ahead, as long as it's not going to cost me a bunch of money, then I need to know. So, they are given that autonomy to really go out and they are dealing with it at that level. […] We're having a lot of success because these officers are, they know they can go out, make decisions, deal with the issues and then come back. (Russell)

The accountability that is unevenly placed upon analysts creates a further divide between uniformed officers and civilians, as the prior is demonstrated a greater level of trust in their position and decision-making.

Sharing Intel and Miscommunication between Police and Analysts

Tensions between crime analysts and police officers can lead to disrupted lines of communication, which can impact the products that crime analysts produce. It is not unusual for the members to fail to provide analysts with the intelligence they need to complete their products in order to better assist the members. As one analyst describes:

> … the little pieces of information that they [police officers] get on every single call, if there could be any way to share all of that with not only me, but with the other officers. It just has to be...I just find that there's a lot of knowledge and there's a lot of experience, but it gets so trapped in these little, not really silos, it's more just within individuals on a certain platoon. (Audrey)

One analyst interviewed described interference during the exchange of information between analysts and officers:

> The information that I prepare for the crime control meetings about what's going on. You know, we sit around, it's me, it's the chief, it's the deputy, all the inspectors, and all the upper management and the senior sergeants. And we talk about all this stuff that's going on. But I don't know how much of that actually trickles down to the front-line officers that are the ones who need to know about it. And, vice versa. I don't know how much of what all those front-line guys know actually gets back up to us. So, there's kind of a disconnect between management and frontline workers, or frontline officers, and there really needs to be a better flow of information in both directions. (Audrey)

The product crime analysts produce can be greatly impacted by officers withholding information. Police officers decision to exclude information from reports or not to share details with analysts impacts the process of analysis. One analyst acknowledges the gaps in the analysis process when information is missing, and the detrimental effects it can have on their results; “I can only work with what I have and if the information is incomplete I may completely shoot off target because I have no idea, I never knew about this guy” (Nina). Another analyst reflects on the importance of receiving information from the police officers:

> I need to know what is going on on the street, you know? Where the problems are. It's one thing for me to pull up my little crime mapping software and plot some hot spots and say, 'Ok, there's some break and enters going on here' or 'This area seems hot for assault' or 'This bar district is getting a little wild' or something, but that's not the same as having officers share information with me. (Audrey)

Analysts are aware of the role of data, and information in their methodologies, and therefore acknowledge how their work can be compromised by lack of communication and cooperation by police officers. Crime analyst’s ability to effectively make data-driven decisions is reliant upon how much information they are given by the members about what they learned during patrols and street checks. The field interrogations and street checks conducted by police officers supports the analysts in their attempts to connect crime series and understand their local offenders. When officers miscommunicate details or fail to provide the pertinent information, the responsibilities of the analysts become increasingly difficult and can impact the products they

create. Officers must be made aware of their role in the intelligence process and the repercussions of poor intel sharing.

Theme: Objective-Subjective Divide of Crime Analysis

Although analysts, as we show, rely heavily on formulas, methods, and software to produce data driven decisions, the execution of their work also involves subjectivity and discretion.

A common theme among all of the analysts interviewed is that they begin to develop experiential knowledge from years of being on the job. Analysts begin to exhibit habits and methods similar to police officers, where they "know" the repeat offenders and have an intuitive sense concerning which offenders are committing certain crimes even before reviewing the files.

One analyst speaks to their familiarity with offenders:

> If there is certain types of crimes I can say which one of our offenders usually does that or which one lives near if we have a theft or something from a vehicle I can say which offender we have that lives around that area that usually does that type of crime. I'm getting to know the offenders. (Yusuf)

As analysts begin to cultivate experiential knowledge, it is not uncommon for them to request more discretion to insert their subjective knowledge into their products as they begin to understand, and in some ways master, the crime information within their district. Analysts describe their on-the-job experience as valuable when executing their responsibilities.

Crime analysts, however, also develop a level of familiarity of offenders in their district. Their job responsibilities, of reviewing criminal activity and crime mapping for example, result in a form of experiential knowledge that some see as valuable as that of police officers.

> At this point, to be honest with you, because I've been here four years I know my offenders so well because usually their up and coming. I haven't had to research someone in probably over a year, because I know them and I'm up to date on them. (Warren)

For this analyst, his experience and knowledge of offenders in his district has resulted in relying on his experiential knowledge. This level of familiarity and confidence displayed by some crime analysts regarding their knowledge of offenders, however, reflects a similar approach and attitude towards what produces good data-driven decisions. These practices question whether crime analysts are in fact engaging in practices that are any different than police officers.

Conclusion

A lack of comprehensive information limits the scope of practice of the analysts, forcing them to fill in the blanks and affecting their ability to remain objective. Improving relations between crime analysts and police officers is crucial to the proper implementation of ILP strategies. Although crime analysis is a critical feature of ILP, it is often met with resistance by police officers. The interviews revealed that the analysts and members are regularly in disagreement regarding whether police or analyst knowledge production is more superior within the context of policing. This finding is consistent with most of the existing literature that uncovered a growing tension between analysts and officers (Chan, 2001; Cope, 2004); yet, contradicts the research conducted by Boba Santos and Taylor (2014) which found that analysts do not need to familiarize themselves with officer experiences and knowledge.

Our study shows the importance for both police officers and analysts to understand their roles and responsibilities for ILP strategies to be effective. This finding adds to the existing literature suggesting there is a disconnect between knowledge types, exemplifying that neither police nor analyst information is sufficient in and of itself, with both positions' methods having flaws. The current study identified that both the scientific methodology behind analysis and the experiential knowledge of officers both contribute different strengths to police practices, but only when working in conjunction with one another. Similarly, the level of accountability expected of

each side furthers the sworn officer-civilian divide. The stringent supervision of analysts when compared to the officers demonstrates that members are granted greater leniency and trust within their roles. This internally favours and endorses police knowledge, ultimately undermining the work and products of the analysts.

Evans and Kebbell (2012) examined qualities and skills of individual analysts to determine what constitutes an effective crime analyst, with an applicable end product being the most important factor. Comparatively, the current research study addresses the ways in which officer-analyst relations affects the job efficacy of crime analysts and the quality of their work, and in turn, their aptitude to be effective within their role. The focus is then shifted from internal to external factors (analyst-officer relationship) related to job success, establishing the function of analysts in the greater picture of intelligence work. Furthermore, consistent with findings by Fyfe *et al.* (2017) and Deukmedjian (2006), the current research discovered that police resources are not being properly allocated with the role of crime analysts being overlooked. Additionally, our study revealed that a key cause of this dysfunction within ILP is in part due to the rapport cultivated between analysts and officers. Parallel with this finding, the current study found it is important to find a solution to this inoperative relationship.

The evidence of a strained relationship between officers and analysts points to an important addition to the literature (Cope, 2004; Hulnick, 2006; Burrell & Bull, 2011). This tension lends to a cycle of misinformation between the analysts and members that renders analysts' products to be under-utilized by police services. The police officers' uncertainty in the quality and need of analysts' products has repercussions on the ability for analysts to promote successful end results. Boba Santos and Taylor (2014) stated that crime analysts' products are designed to be actionable by police officers. Given this knowledge, the current research adds an

essential piece of information to the existing literature, as it advances toward the idea that analysts are then not able to serve their desired function and lack the required resources to provide police with practical products in an effort to prevent and reduce crime. The current research also found that the inability of analysts to fulfill their responsibilities reaffirms the members preconceived notions that analysts are unable to develop useful information. Overall, the damaged sworn-civilian relationship weakens the role of analysts and the underpinnings of ILP strategies.

This first-hand knowledge, that used to be unique within the police culture, begins to chip away at the intended objectivity of crime analysis. Overall, the communication and relationship between police officers and analysts shapes the role of the analysts in ILP. Although analysts appear to be committed to the use of systematic and scientific methodologies when developing their products, we show, they also rely on their experiential knowledge. We show that analysts begin to fill in the gaps of officer reports to produce their final product, and in turn, exert their own form of experiential knowledge. With time comes the understanding of the population analysts work with and the ways in which their products can be best applied within their communities. This raises the question of whether analysts' knowledge is any different than their officer counterparts. The officer-analyst relationship influences the experiential knowledge and discretion analysts practice within their positions.

The current research addressed gaps in the literature through demonstrating the impact of officer-analyst relationships on the production and use of analytical products. These findings further support the importance of training to understand the relations between police and crime analysts. Future research should aim to address how to best mend the relationship between

officers and analysts to guarantee analysts' products are properly utilized and the goals of ILP are supported.

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