



# Policing and Society

An International Journal of Research and Policy

ISSN: 1043-9463 (Print) 1477-2728 (Online) Journal homepage: <http://www.tandfonline.com/loi/gpas20>

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To cite this article: Marthinus C. Koen, James J. Willis & Stephen D. Mastrofski (2018): The effects of body-worn cameras on police organisation and practice: a theory-based analysis, Policing and Society, DOI: [10.1080/10439463.2018.1467907](https://doi.org/10.1080/10439463.2018.1467907)

To link to this article: <https://doi.org/10.1080/10439463.2018.1467907>



Published online: 23 Apr 2018.



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# The effects of body-worn cameras on police organisation and practice: a theory-based analysis

Marthinus C. Koen<sup>a</sup>, James J. Willis<sup>b</sup> and Stephen D. Mastrofski<sup>b</sup>

<sup>a</sup>Criminal Justice Department, University of Southern Indiana, Evansville, IN, USA; <sup>b</sup>Department of Criminology, Law and Society, George Mason University, Fairfax, VA, USA

## ABSTRACT

This study applies the technical/rational model of organisations to help explain the effects of body-worn cameras on police organisation and practice in a single police agency in the United States. Consistent with the technical/rational model, cameras had enhanced those people-processing and environment-changing features of the police organisation which had tangible goals and well understood means for their accomplishment. In comparison, body-worn cameras were less successful in changing supervision and training, which were not well developed technically. We posit that improvements in these people-changing aspects of police work will likely require public pressure for higher levels of police professionalism, rigorous evidence on how these cameras can make training and supervision more effective, and police agencies willing to experiment with their strategic implementation.

## ARTICLE HISTORY

Received 18 December 2017  
Accepted 17 April 2018

## KEYWORDS

Body-worn cameras;  
organisational change; police  
technology

## Introduction

Body-worn cameras are small, mobile devices that patrol officers wear to provide video and audio recordings of their encounters with the public (White 2014). These digital recordings can be reviewed for a variety of purposes, such as judging the appropriateness of police behaviour, especially in those situations with questionable outcomes (Culhane and Schweitzer 2017). Over the last decade these cameras have become a worldwide policing phenomenon in the United Kingdom, France, South Africa, and many other countries (Muggah 2014, Ariel *et al.* 2016). In the United States body-worn cameras have become an important element of police reform in response to recent police killings of civilians, many of whom were black and unarmed (White and Coldren 2017). The 2013 Law Enforcement Management and Administrative Statistics survey estimated that 32% of United States local law enforcement agencies were using body-worn cameras, and a recent comprehensive review suggested that 'this percentage has likely greatly increased since then' (Lum *et al.* 2015, p. 3).<sup>1</sup>

New technology has long been considered a panacea to complex social and organisational problems (Marx and Guzik 2017, p. 482), and so it is unsurprising that the potential of body-worn cameras to reform policing resonates strongly with popular sentiments in the United States (Pew Research Center 2017, p. 8). Given this popularity, it is reasonable to expect this technology will continue to diffuse rapidly across the policing landscape (Strom 2017, p. 6–11).

Policymakers and some researchers have made numerous claims for body-worn cameras, including their capacity to reduce use-of-force incidents and civilian complaints, strengthen police-community trust, enhance transparency, increase police accountability, and improve police officers' self-

**CONTACT** James J. Willis  jwillis4@gmu.edu

The first two authors' names are listed alphabetically. Each contributed equally to this article.

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legitimacy (Lum *et al.* 2015, Tankebe and Ariel 2016, Ariel *et al.* 2017, Cubitt *et al.* 2017, Maskaly *et al.* 2017, White *et al.* 2017a). Many studies explore to what extent cameras deliver these benefits (Ariel *et al.* 2015, 2016, 2017, Jennings *et al.* 2015, Katz *et al.* 2015, Braga *et al.* 2017, Headley *et al.* 2017, Henstock and Ariel 2017, Sutherland *et al.* 2017, White *et al.* 2017b).

The reformers' perspective for how cameras are supposed to 'revolutionise' police practice is animated by technical/rational organisation theory (hereafter 'technical') (Belmaker 2014). A core assumption of this model, one that often justifies technological changes in policing (Manning 2014), is that technological innovations are 'discrete entities' with distinctive physical and digital properties (Orlikowski and Scott 2008, p. 439). These technologies are then implemented in ways that support existing strategies for helping an organisation achieve its goals more efficiently and effectively (Hendrix *et al.* 2016). However, expectations that technology will transform organisational practice are often not found to have a basis in objective observation (Willis, Mastrofski, and Weisburd 2007, Manning 2008, Sanders *et al.* 2015, Lum *et al.* 2016, Strom 2017). The question is whether this also applies to body-worn cameras. To what extent are body-worn cameras 'changing the dynamics of policing on the ground?' (Haggerty and Sandhu 2014, p. 11).

The answer from technical theory for technology's limited effects is not just that some parts of a technology may be underdeveloped, but that the organisation itself varies in its investment in and receptivity to the technology. This is what we discovered in our fieldwork. In what follows we examine whether and how 'technical' limitations applied to the implementation of body-worn cameras in a single police agency. In addition to providing a theoretical basis for understanding the effects of body-worn camera use on police organisations, this approach helps identify where implementation problems are likely to occur and why.

First, we broaden the conceptualisation of body-worn camera technology by using Hasenfeld and English's (1974) (see also Mastrofski and Ritti 2000) conceptualisation of technologies as people-processing, people-changing, and environment-changing. This framework helps identify six areas where potential changes are likely to occur and what the nature of those changes is likely to be: reporting, discretion, and civilian complaints (people-processing); training and supervision (people-changing), and police-civilian interactions (environment-changing).

Second, because the reformers' perspective is animated by a technical theory of organisations, we apply this to a case study of body-worn camera use in a small police agency expecting that some parts of the technology were not well developed. We also chose this approach to generate in-depth, contextual insights that help make sense of body-worn camera use (see Sandhu 2017), and to help frame future research examining their effects.

## Conceptualising body-worn camera technology

Organisation theory conceptualises technology in terms other than just its physical or material dimensions. From this perspective technology is simply a means for converting raw materials or organisational inputs into outputs (Perrow 1970, Scott 1987, p. 211). In the domain of human service organisations, such as police agencies, people are considered the raw material to 'which technology is applied to produce a service or product' (Mastrofski and Ritti 2000, p. 185). This broad definition helps capture technology's relationship to organisational structures for controlling and coordinating the organisation's work (positions, programmes, procedures, and policies) and its relationship to actual work practices (Klein and Ritti 1984, p. 101).

Given this conceptualisation, body-worn cameras are a technology applied to people to change how police work is accomplished. Moreover, a useful way to capture the potential nature of changes due to camera use and where they are likely to occur is to adopt Hasenfeld and English's (1974, p. 5) classification of different technologies in human service organisations as people-processing and people-changing. Mastrofski and Ritti (2000, p. 191) apply this classification in their attempts to understand the implications of technology for police reform and extend it to another type of technological function, 'environment-changing'.

People-processing technologies ‘attempt to change their clients not by altering personal attributes, but by conferring upon them a public status and relocating them to a new set of social circumstances’ for further processing and future intervention (Hasenfeld and English 1974, p. 5). Many traditional policing tasks, such as making arrests and completing crime reports, serve the function of people-processing. The emphasis of these technologies is putting clients (e.g. juvenile delinquent) into the right response category, so that other human service agencies may take actions that limit future harm (incarcerating offenders), or by changing their behaviour (detering them) (Mastrofski and Ritti 2000, p. 189–190).

In contrast, people-changing technologies attempt to ‘alter directly the attributes or behavior of their clients’ (Hasenfeld and English 1974, p. 5). The emphasis here is not on assigning a client a status for future processing, but on enacting positive change (Hasenfeld 1983, p. 140). For example, school-based drug education programmes can be viewed as a technology designed to change children’s attitudes, and ultimately their behaviour, regarding drug use (Mastrofski and Ritti 2000, p. 191).

These classifications can be used to distinguish different kinds of human service organisations, but they are also useful to show how a technology can serve both people-processing and people-changing purposes. Take police reporting, for example. Supporters of body-worn cameras consider one of their virtues to be their ability to provide video and audio footage. This can enhance a police agency’s core people-processing task of acquiring and documenting information that could be instrumental in making or justifying the classification of people and their situations. This information also allows for a more accurate assessment by others with whom the police must coordinate as to what official actions should be taken in response to a particular case (e.g. a prosecutor deciding to pursue or dismiss charges).

Another people-processing function of body-worn cameras is their potential for scrutinising police decision-making and its relationship to expectations articulated in criminal procedures and department policies for using force, conducting traffic stops, and other actions (Walker 1993). Rules seek to render the processing of cases more efficient by reducing uncertainty in how police officers classify people and their problems, and by encouraging uniform responses to produce ‘predictable (and desirable) results’ (Mastrofski and Ritti 2000, p. 195). Cameras contribute to this process by making officers’ actions more visible to others, making it easier to hold officers accountable for adhering to established procedures.

The people-processing function of body-worn cameras extends to the civilian complaints process. Video evidence provides a record that is independent of the memories and interpretations of the parties directly implicated in the complaint and can corroborate or contradict different versions of what transpired (Ariel *et al.* 2017). This helps police administrators process civilian complaints more quickly, even discouraging citizens from filing frivolous complaints in the first place (White 2014).

As for the *people-changing* functions of body-worn cameras, this technology has the potential to change *police officers* themselves. Indeed, reformers claim video footage can alter the intrinsic motivations or capabilities of police officers through more effective training and supervision (White 2014). If used to their full potential, cameras could go well beyond supervisors and police trainers correcting tactical mistakes to altering officers’ skills, knowledge, and decision-making in a ‘fundamental, enduring way’ (Mastrofski and Ritti 2000, p. 191).

As for the effects of cameras on citizens, cameras evoke another type of function, ‘environment-changing’. Environment-changing technologies seek to ‘alter the costs and benefits of both desired and undesired aspects in designated spaces’ (Mastrofski and Ritti 2000, p. 191). In the case of cameras, civilians (and officers) are temporarily deterred from behaving badly in the immediate context of a police-civilian interaction ‘because of the cognizance that someone else is watching’ (Ariel *et al.* 2015, p. 516, emphasis in original).

In sum, body-worn cameras are a technology that can be conceptualised as people-processing, people-changing, and environment-changing. However, understanding and predicting any effects on what the police do and how they do it requires further exploration of the underlying theory

about technology and organisations that is driving reformers' hopes for body-worn camera implementation.

### **Implications of body-worn camera technology: a technical/rational perspective**

In organisational studies (Jaffee 2001: c. 8) it is well established that technology has implications for the coordination and completion of an organisation's work. Supporters' aspirations that body-worn cameras will improve police performance evokes a general but underdeveloped understanding of some of the key propositions of a technical perspective on organisational change. We review this theory briefly and apply it to the different functions of body-worn camera use to better anticipate the consequences of this reform.

A key assumption of the technical model is that organisations produce precisely specified products or services for a market 'such that they are rewarded for effective and efficient performance' (Scott 1987, p. 126). Technologies and their supporting organisational structures and processes are rational to the extent that they help the organisation realise its goals effectively and efficiently (Hendrix *et al.* 2016). When police departments are behaving according to the technical model, they identify goals or 'products' that are 'predetermined and precisely defined' and implement technologies whose techniques and procedures for accomplishing them are 'explicit' or well elaborated and understood (Mastrofski 1998, p. 167). Clear goals and specific guides for action increase the prospects of organisational success, which can then be demonstrated through various performance indicators.

According to the technical model, when it comes to people-processing and environment-changing functions, we anticipate that body-worn camera technology is well developed technically. All three people-processing tasks can be characterised by well-defined and predetermined goals (accurate reporting, reducing complaints, complying with laws, and administrative rules). Moreover, assumptions of how cameras will contribute to these tasks in relation to existing organisational structures and practices is understandably rational. Similarly, in terms of their environment-changing function, the goal of improved behaviour is easily comprehended, as is the underlying deterrence theory on which the intervention of body-worn cameras is based (Ariel *et al.* 2017). Because body-worn cameras are expected to help the agency attain these goals with greater efficiency and/or effectiveness, the technical model predicts they will actually be employed for these purposes.

At the same time, when objectives are less tangible and the means–ends relationships for accomplishing them are not well developed, the technical model predicts that organisations will be less likely to pursue them because of the implementation challenges they present and, consequently, the higher risk of failure (Mastrofski 1998, p. 167). Unlike the people-processing and environment-changing aspects of body-worn cameras, we anticipate that their people-changing functions are more complex and less explicit, and their success is more difficult to assess.

Cameras might provide useful footage of an officer's behaviour, but one of the major challenges to effective supervision is the lack of consensus about which behaviours constitute superior street-level performance given goals that are often 'ambiguous, changing, multiple, and conflicting' (see also Muir 1977, Thacher 2008, p. 55). Assessments of performance are made even more difficult by the absence of codified knowledge on the best that the police craft has to offer for producing desired outcomes in many commonplace encounters with the public (Willis and Mastrofski 2017). Training is a common means for improving police practice, but there is little scientifically validated evidence about what and how police training improves street-level performance (Committee to Review Research 2004, p. 141–147, but see Miller and Alexandrou 2016). In light of these limitations, the technical model anticipates that supervision and training will be left largely unchanged by body-worn cameras absent a concerted attempt to overcome the challenges they pose. In what follows, the above discussion of how body-worn cameras should behave from a technical perspective is the basis for interpreting our observations in the Sunnyvale Police Department (a pseudonym).

## Research site

We observed Sunnyvale during the summer of 2015. Ideally we would have observed police operations directly before and after the cameras' implementation, but due to resource constraints, our scope was limited to a single site within driving distance of our location. Once we had identified all such local police agencies using cameras, we realised that none were suitable for a pre-/post-observation comparison. Consequently, we identified all local police departments that had been using cameras for at least one year before our planned visit. This would help ensure that the agency had overcome any initial growing pains associated with their implementation and that enough time had transpired for changes to occur. We also sought an agency where body-worn camera implementation was sufficiently recent that officers would be able to recall changes. Based on these criteria, we gained access to the Sunnyvale Police Department, serving a small city in the United States. At the time of our fieldwork, all patrol officers had been using cameras for just over 2 years, a short enough period to ensure that memories of their implementation were still reasonably fresh. As others have shown (e.g. Moore *et al.* 2000), retrospective data collection is a reasonable method for studying processes of organisational change (see Van de Ven and Huber 1990).

Sunnyvale served a population of approximately 25,000 people and its police department comprised 60–70 sworn officers.<sup>2</sup> According to the Federal Bureau of Investigation's Uniform Crime Reports, violent crime and property crime rates were above the national average crime rates for cities of its size (FBI 2016). Sunnyvale was mostly suburban. Approximately 10% of residents lived under the poverty line. The racial make-up of the city was about half African-American and a fifth White. The majority of the remaining population was divided roughly equally between Latino and Asian residents ( U.S. Census Bureau, *n.d.*).

No case study can represent all local law enforcement agencies, but in many respects Sunnyvale was very similar to many American municipal and county police agencies. For example, it was large enough to have a multi-level rank hierarchy and specialist units. Police agencies of this size (50–99 sworn officers) typically have some civilian staff and potentially have the capacity to add body-worn cameras and the management of data (Reaves 2015). Indeed, agencies with fewer than 250 sworn are somewhat *more* likely to employ body cameras than larger agencies (Strom 2017, p. 6–7).

Interviews with commanders indicated two primary reasons for the implementation of body-worn cameras. First, they hoped this technology would help field training officers train new recruits. Second, leadership felt that adopting body-worn cameras would protect the agency and its officers against frivolous lawsuits and complaints.

The department equipped its officers with head-mounted cameras and contracted with a company to provide a cloud-based data storage system, which offered two ways for Sunnyvale officers to access footage. With 'user' access, supervisors, detectives, and patrol officers could look at recorded footage from their own devices, but users could not view footage belonging to others. 'Administrator' status conferred broader access privileges, which was allocated to commanders and 'training and retention officers'. During our fieldwork only one of the handful of first-line supervisors had Administrator access to camera footage due to his/her designation as a training and retention officer. As fieldwork ended, all first-line supervisors were provided this access.

## Data and methods

Our sampling was purposive. We asked the chief and command staff to identify officers most familiar with body-worn cameras, including those involved in the implementation process and those who wore cameras or used footage. This resulted in a sampling frame of 45 officers (including the chief) across all ranks, which represented the population of interest. Of these 45 officers, 38 (84%) participated, including 23 of all 26 patrol officers.<sup>3</sup> All participating officers had been with the Sunnyvale Police Department for three years or longer, and so they could speak to changes that occurred following camera implementation.

Our primary source of data was semi-structured interviews, audio-recorded and later transcribed (Patton 1987). We created different interview guides based on rank, as body-worn cameras served different purposes for each of these groups. So, for example, we asked patrol officers, how body-worn cameras had affected their encounters with the public and how they made decisions. When it came to first-line supervisors, we included questions about how cameras had influenced the way they conducted performance evaluations and training. On average each interview lasted 40 minutes. Participation in the study was voluntary; interviewees (aside from the chief) were guaranteed confidentiality. At the end of the interview, we asked patrol officers to complete a short electronic survey answering Likert-scale questions on body-worn cameras. For example, 'Body-worn cameras require me to change the way I report my activities' (strongly agree, agree, etc.). The survey quantified the responses that officers had already expressed to acquire more precision and complement the qualitative findings.

To learn about cameras in their natural setting we asked those 23 patrol officers who had agreed to be interviewed, if we could accompany them for a few hours during one of their patrol shifts. Nineteen granted our request,<sup>4</sup> which we used to inform what we were learning in our interviews (and vice versa), and as an opportunity to ask additional follow-up questions. These observations lasted about 2 hours. We also took other opportunities to learn about the department and its cameras, such as attending in-service and other training sessions and reviewing relevant documents.

For coding interview transcripts we used Atlas.ti (Muhr 1991). During the first round of coding data were clustered into themes under a start list that corresponded to our six areas of interest. Transcripts were then re-read several more times and this list was further refined with sub-codes to help identify meaningful patterns in the data (Miles *et al.* 2014). For example, following an initial coding of data on the topic of police reporting, additional codes were constructed regarding changes in perceptions of reporting and changes in reporting practices. These were then further sub-divided where relevant, such as creating a code for reporting behaviour on high visibility or complex cases such as use-of-force incidents (Lofland and Lofland 1995). We sought to strengthen the validity of our qualitative research by using other methods of data collection (interviews, observations, survey), by being attentive to any cases which contradicted our developing themes, by eliciting multiple viewpoints on camera use, and by sharing a copy of the report on which this research is based with Sunnysvale's leadership as a check on its credibility (Mays and Pope 2000).

## **Assessment of body-worn cameras' effects on police organisation and practice**

Our assessment of the effects of body-worn cameras is organised around the six performance areas we identified as relevant to this technology's people-processing (reporting, discretion, and civilian complaints), people-changing (training and supervision), and environment-changing functions (police-citizen interactions). In what follows we draw mainly on our interviews, but where relevant supplement these data with our field observations, findings from our officer survey, and relevant department documents.

### **Reporting**

While the capacity to use force lies at the core of the police role (Bittner 1970), so does the 'production and processing of information' (Reiss 1992, p. 82). From a technical perspective, it is important that a police report is accurate to ensure the smooth processing of offenders, especially by those outside of the organisation who must make decisions based on this information. Challenges to the officer's account of events by defence attorneys can slow an overburdened court process, and inaccuracies can lead to ineffective and unjust dispositions. Body-worn camera recordings provide a straightforward means to improve an already highly structured reporting process (Ericson and Haggerty 1997, p. 295), as they provide a video and audio record that can be readily integrated into the

written report. Given cameras' technical capacity to enhance reporting, we expect them to be used frequently for this purpose.

According to Sunnyvale's official policy, patrol officers were required to record all encounters with civilians and inform them that they were doing so. If a civilian did not consent to being recorded (which we did not observe during our ridealongs), the officer was to turn off the camera. However, all the 23 patrol officers indicated on the survey that they regularly used body-worn camera footage when they wrote incident reports which is consistent with the technical model. Officers frequently used camera footage to help them recall the details of complex cases for the purpose of filing accurate reports, especially those likely to be scrutinised by others. These included driving under the influence of alcohol or drugs, use-of-force incidents, incidents involving multiple offences, and assaults. Officers consulted body-worn camera footage in these cases because they were more likely to experience closer inspection from their supervisors or from external actors, such as prosecutors and defence attorneys (mentioned by 19/23 officers).

Fifteen officers (65%) explained that footage helped them capture important contextual information about incidents or suspects in their reports, especially if the information helped justify the officer's behaviour, such as his or her response to the appearance of a threat. As one said: 'I have always been detailed, but even more now to see [the suspect's] reactions ... if [suspects] are making a fist, clenching fist, grinding their teeth. It makes [reports] more accurate about everything' (Patrol Officer 1). Capturing situational details extended to what was spoken during an encounter. Ten patrol officers said they used video footage to help them recall and include exact quotes of what people said in their reports. Incidents of driving under the influence came up several times during our interviews. Although the procedures for establishing impairment were clearly prescribed, defence attorneys could try to find fault with how the officer administered them and interpreted the results.

In addition to improving the quality of their reports, some officers noted that discrepancies between their written reports and available footage could undermine their credibility. They explained that when they started using cameras, some of their peers got in trouble with supervisors, or they would have their cases thrown out of court for inconsistencies between their written reports and video footage. In one interview the officer said:

Because you have to watch your P's and Q's now, you have to dot your i's and cross your t's. If you fudged something on a report a long time ago, you're not going to be fudging that now. If what you write isn't what happened on video, the court's going to tear you up. (Patrol Officer 2)

In sum, body cameras helped enhance the organisation's traditional people-processing activity of report writing by improving patrol officers' capacity to produce detailed and accurate reports, especially when deficiencies could undermine a desirable outcome for the officer and the agency. 'Video-enhanced' report writing was improved by aiding prosecutors in making decisions, mitigating the possibility of legal challenges, and helping ensure that officers were perceived as professional and trustworthy.

### **Discretion**

From a technical perspective, increasing the visibility of officers' actions through body-worn camera footage enhances the organisational capacity to hold officers accountable for adhering to criminal procedures and bureaucratic rules. Whether or not following these rules contributes to the most effective response in mitigating or resolving a specific problem, they can illuminate 'by the book' decisions for the smooth processing and case disposal (Mastrofski and Ritti 2000, p. 196). Considering every incident on its merits is time-consuming and cumbersome, and so rules help simplify this process. The availability of rules (if routinely enforced), decreases uncertainty about the department's response. The availability of the body camera's presumably reliable record of what happened offers an even greater incentive to follow those rules. Conforming to formal protocols and traditional

approaches and documenting those practices also helps protect the agency and its officers from claims of misconduct. Because video footage can be used by others to question officers' decisions that diverge from established protocols, we expected officers to assign a high priority to following laws and rules, particularly in such high discretion situations as traffic violations. In the face of uncertainty, responding according to established criteria simplifies decision-making and makes officers less vulnerable to claims of differential treatment.

As predicted by the technical model, our fieldwork suggested that some officers felt that the implementation of cameras had made them more likely to comply with prescribed rules. For example, about a quarter of our patrol officers (8/23) reported that camera implementation had made them more 'legalistic', or less comfortable acting leniently, that is 'dispensing less punishment than the law allowed the officer to deliver' (Schafer and Mastrofski 2005, p. 226). Similarly, on our officer survey, over half (14/23) strongly agreed or agreed with the statement, 'I feel like I have to follow the letter of the law when wearing my body-worn camera.' Furthermore, 15 officers indicated on the survey that they felt uncomfortable 'cutting breaks' on the street. This was particularly true of more minor offences where officer decision-making was less constrained by the legal requirements to make an arrest.

Our interviews suggested that a reason for this change is that cameras now made it possible for others, particularly superiors, to examine an officer's decision retrospectively and assess its appropriateness given the particular circumstances. As one officer explained, the possibility of increased scrutiny made him more likely to write a traffic ticket, instead of giving written warnings or just letting someone off with a 'pep-talk'. The same officer said:

I feel like I don't write as many warnings anymore. I think that the cameras have affected how many breaks I give people. I feel like I have to be more consistent and so I'm afraid to give a warning because I don't want to get chewed out. (Patrol Officer 3)

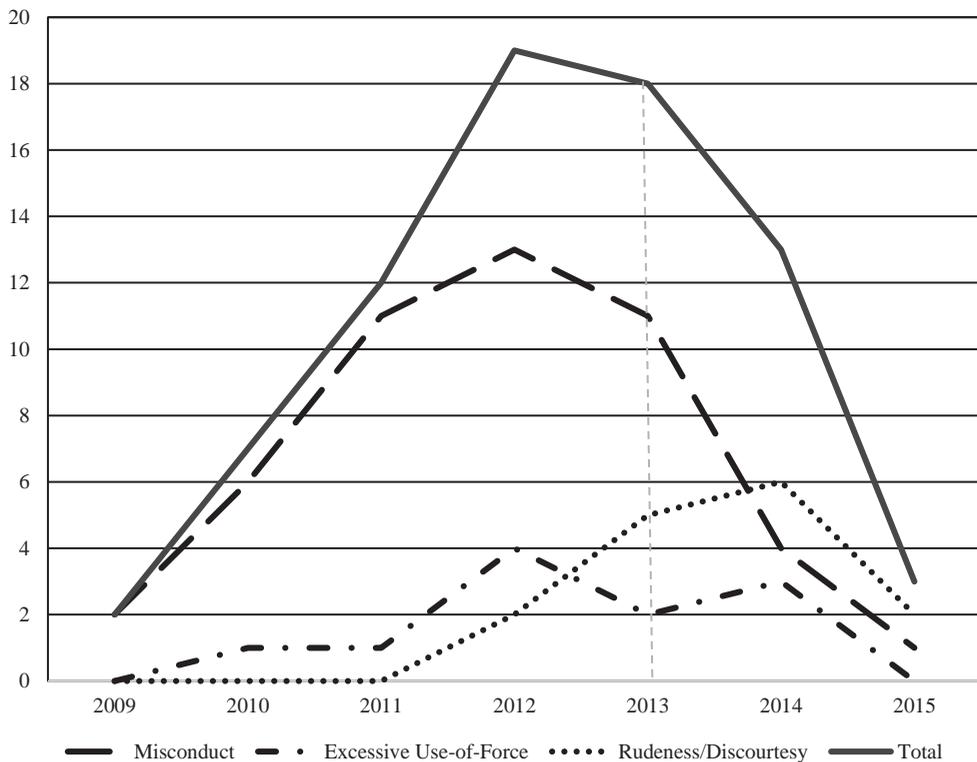
Another patrol officer stated that a benefit of ticketing everyone who was pulled over decreased the likelihood of being questioned about whether they were treating people differently, or favouring some groups over others (implying bias based on race, for example) (Patrol Officer 4). From what we heard, officers felt they were vulnerable to the claim of differential treatment because a key limitation of cameras was that they only recorded what transpired (which was open to the interpretation of the viewer) and did not capture the officer's internal thoughts.

When the law gives clear direction on what to do and how to do it and the presence of camera footage increases the possibility of negative consequences for not following criminal procedures or department policies, a rational response is to process cases according to what these prescribe. Moreover, a strict enforcement approach helps buffer the officer from potential criticisms of acting arbitrarily, or of treating people differently based upon their membership in a particular social group.

### ***Civilian complaints***

A third function of body-worn cameras is resolving civilian complaints, clearly a people-processing function (Ariel *et al.* 2017, p. 294). Because complaints threaten public trust, police agencies are concerned with reducing their number, have procedures for resolving them through first-level supervisors or through internal affairs units, and measure performance by categorising and tracking complaints over time (Walker and Katz 2005). In pursuit of technical effectiveness, we expect the agency and its officers to use video evidence to process and resolve civilian complaints.

In our interviews we focused on how cameras had been integrated into complaint processing. We also requested department data on civilian complaints for three years before camera implementation and three years after. This information included formal complaints on police rudeness or discourtesy, police misconduct, and excessive force. The number of complaints in each category was small, but our purpose was simply to identify possible trends.



**Figure 1.** Total complaints filed at the Sunnyside Police Department by complaint type (2009–2015).

Similar to much prior research (Ariel *et al.* 2017, Braga *et al.* 2017), formal complaints against officers at Sunnyside since camera implementation decreased markedly since their implementation in 2013 (see Figure 1).

The reasons are unclear. It may have less to do with the behaviour of the actual officer, but with changes in the behaviour of potential civilian complainants. If they knew that the officer was taping the interaction, they might be more selective in filing a complaint. Our interviews cannot resolve this issue, but they do help uncover how cameras might be affecting how agencies process complaints more efficiently.

Sergeants told us that often civilian complaints, particularly complaints about officers being rude (rather than cases of serious misconduct) would come to them directly before being filed officially. Commander 1 explained that in response sergeants would review the camera footage to see if the complaint was baseless or warranted. If they determined the complaint was unsupported by the footage, they informed the complainant, who might then decide not to pursue it. He explained that sergeants might also invite civilians to review the footage with them. Having viewed the footage, civilians might reconsider whether with hindsight they still wanted to pursue their complaint formally.

When it comes to reductions in the number of complaints due to body-worn camera implementation, it is possible that having seen the footage, members of the public are more understanding or accepting of the officer's behaviour (Harris 2010, p. 364). It is also possible, and we can only speculate, that supervisors or officers in internal affairs may use footage to subtly influence the complainant into not pursuing a formal complaint.

As predicted by the technical model, Sunnyside embraced the people-processing function of using body-worn cameras to resolve complaints. The availability of body-worn camera footage

enhanced the capacity of first-line supervisors to resolve some civilian grievances informally, thereby reducing pressure on the formal complaints process. Indeed, first-line supervisors indicated that footage was usually the first piece of evidence that they would examine when investigating complaints.

## **Training**

In addition to their people-processing functions, another potential benefit of body-worn cameras is their capacity for changing the attitudes and behaviour of police officers through improvements in recruit and in-service training (White 2014). Indeed, Sunnyvale's policy recognised the potential of this people-changing function by requiring training and retention officers to conduct weekly reviews of videos for 'proper use and training issues' and stated that videos could also be used for in-service training.

One of the technical benefits of body-worn cameras is that footage can be used by police trainers to make fine-grained assessments of multiple dimensions of an officer's performance (e.g. treatment of civilians, quality of problem diagnosis, etc.), to encourage officers to reflect meaningfully on what worked well and not so well, and to transform how patrol officers behave in the future (Phelps *et al.* 2016).

Police training, however, like education more generally (Meyer *et al.* 1983), is not well developed technically. There is very little scientific evidence validating which methods of delivery work best for training different groups, such as rookies or more experienced officers (Skogan *et al.* 2015). Moreover, little is known about the systems that need to be in place within organisations (e.g. for performance monitoring and evaluations, etc.) to ensure that training remains effective once completed (Mastrofski 2007). In the absence of any clear understanding of how cameras might deliver training benefits and how improvements could be captured and measured, the technical model predicts that cameras will do little to change training practices.

In Sunnyvale police instructors sometimes used body-camera footage from officers for in-service training, but only in those few cases where existing video scenarios were not available from other sources, such as YouTube (Training Officer 2). The structure of in-service training remained very similar to before the implementation of cameras, with trainers using lectures and in-class scenarios involving trainers or officers assuming different roles and acting out various situations to generate discussion. Training officers reported that body-camera footage might be unavailable for their specific training needs, and they also did not want to risk using footage that might embarrass a colleague. One officer said, 'We don't show it necessarily to all the squads, you know, because we don't want to necessarily embarrass certain officers or certain squads' (Training Officer 1).

Similarly, the use of actual body-camera footage was not central to how field training officers instructed and evaluated recruits, with instructors continuing to rely on their field observations to offer recruits feedback. They were most likely to refer to video footage to help them recall the day's events when writing daily summary reports, or to resolve disagreements should a recruit dispute the field training officer's account of what transpired during a particular event. We did not hear about or observe field training officers showing footage to a recruit as part of a more intensive and systematic analysis of his/her performance.

The emphasis on using footage as a record-keeping device rather than as a means for significantly enhancing learning was also revealed in the department's using footage to document the need for additional training. During observations of in-service training, each officer's performance was documented, as they faced different training scenarios. Should a training and retention officer view footage of a particularly serious issue, such as a use-of-force incident, this might be the catalyst to provide that officer with remedial instructions. One of these officers explained, 'If it was a serious offense and there was a serious officer safety concern and I thought "Hey, this guy needs serious retraining in this area", then I would recommend him for remedial training' (Training Officer 2).

When it comes to training as a people-changing aspect of body-worn camera use, our observations illustrate how cameras did little to change existing practices. A key benefit was the video record they provided of officers violating department policy or training protocols. Here cameras provided a straightforward means of documenting mistakes for justifying additional training (a people-processing function).

### **Supervision**

Body-worn cameras have the potential to strengthen the crucial role that first-line supervisors or sergeants play in police organisations in offering patrol officers direct guidance, overseeing their behaviour, and conducting annual performance assessments (Van Maanen 1983). Sergeants are rarely present for many of their officers' interactions with civilians (Engel 2001), but now recorded footage can be examined closely in order to assess the quality of their officers' work, to identify wrongdoing, or a job well done. Thus, cameras have the potential to provide supervisors with the means to enhance the delivery of police services by changing the attitudes and behaviours of their subordinates.

The effectiveness of this people-changing approach, however, is hindered by a number of limitations. Although footage might provide a visual record of an officer's behaviour, the basis of making judgments about what constitutes good or bad performance in the everyday situations confronting police is hindered by the absence of clear performance goals and scientifically-validated means for achieving them (Bayley and Bittner 1984, Willis and Mastrofski 2016). Thus not only is it difficult to establish clear standards of performance quality in say, a domestic dispute (Mastrofski 1996), but it is also difficult to discern whether a patrol officers' response delivered desirable outcomes (at least beyond the confines of the immediate situation) (Willis 2013).

During almost all our fieldwork, first-line supervisors did not have direct access to video footage from their officers' cameras but had to request it specifically from one of the training and retention officers. Sunnyvale's policy, which did not require first-line supervisors to request footage proactively to review officers' performance, and their limited access to footage for most of the implementation period, sent a clear signal that using this technology to strengthen supervisory control in the agency was not a priority. Of the five sergeants, only one said he proactively requested video footage to assess performance (Sergeant 1), which also helps explain why only 8 of the 23 patrol officers we surveyed agreed that cameras had resulted in 'closer scrutiny' of their work from their sergeant.

Fortunately, when all sergeants were granted Administrator access during our last week of fieldwork, we were able to ask them how this change affected them. Almost all agreed that they would not change the way they supervised their patrol officers. They were disinclined to retrieve footage because they did not want to get their subordinates in trouble for minor violations.

Undoubtedly top management's lack of interest in showing supervisors how to use videos to conduct routine assessments and supervisors' concerns over protecting their officers help explain how little first-line supervision had changed with their implementation. But this also makes sense from a technical perspective. There are few professional standards for prescribing the best that the police craft has to offer in regards to the quality of an officer's street-level performance, making it very challenging to use cameras for this purpose (Kelling 1999).

### **Police-civilian interactions**

A major focus of body-worn camera research has been its effects on police-civilian interactions, particularly whether cameras make officers less prone to use force, more attentive of citizens' rights, and more intent on acting civilly (Ready and Young 2015, Braga *et al.* 2017). The technical perspective anticipates that cameras lead to these kinds of behavioural changes. Not only is their environment-changing goal well defined, so is the underlying mechanism for its accomplishment. According to deterrence theory, cameras deter misbehaviour by simply increasing the certainty that it will be

detected and punished. Similarly, increasing transparency can incline officers toward procedural justice, whereby they treat people with greater fairness and respect if that is a departmental policy priority (Hedberg *et al.* 2016, White *et al.* 2017a). Thus cameras can modify behaviour through greater surveillance (environment-changing) and not through direct attempts to transform an officers' personal attributes (people-changing).

None of the officers we interviewed said wearing a camera had fundamentally transformed how they dealt with members of the public, although in fairness, the department did not coordinate the implementation of body-worn cameras with the establishment of behavioural or performance priorities. So, for example, officers did not express a greater obligation to fully address or resolve a problem, nor did they express concerns about initiating encounters. Rather, officers told us that cameras had made them more mindful of how they communicated with citizens (both in terms of the process and content of their speech). In addition, they felt that cameras made citizens more civil.

More than half of officers (13/24) reported that wearing a camera influenced how they communicated with people. These officers were more aware of speaking in front of an audience that could extend beyond the parties involved in the immediate encounter. Hence, they were more prone to exercise 'verbal caution' (see Coldren 2015), which meant avoiding profanity, being mindful of the tone of their speech, and paying more attention to the content of what they said.

For example, 8 of the 23 officers interviewed said that they were now more careful not to use profanity during citizen interactions. According to one patrol officer:

This was a pretty straightforward situation. But when you know, you're having a bad day, or you are in an intense situation you know? I would normally maybe let a curse word fly. And we are not allowed to curse at citizens, but you know, we all do that from time to time. Now, I tend to watch myself a little more. (Patrol Officer 5)

In a similar effort to be respectful, a smaller proportion of officers (4/23) mentioned they were more sensitive to the tone of their voice, preferring to keep it neutral or friendly rather than raising it unnecessarily, or being too stern or abrasive. Over a quarter of officers also reported that they were more likely to concentrate on *what* they said as well as how they said it. Their concern was that whatever they said could be reviewed and queried by others.

In addition to some of the changes in their own interpersonal communication, almost all of the patrol officers interviewed (20/23) said that cameras improved citizen behaviour. According to some researchers, cameras make members of the public (as well as police) more aware of the obligations of civility because of the shame and censure they might experience should footage of their behaviour be made available to others (Goodall 2007, Farrar 2013). The officers with whom we spoke shared this viewpoint, but they did not explain the calming influence of cameras solely in terms of a civilising effect. They also referred to the capacity of cameras to increase transparency which helped reassure the public that they were safe from police abuses of authority.

Officer interviews and survey responses suggested that cameras may have resulted in some subtle shifts in how police communicated during encounters with citizens. These changes depended on the presence of the camera and not on attempts to change an officer's fundamental motivations and values toward others (e.g. the intrinsic moral importance of treating people with respect). We must obviously be cautious about relying on officers' own self-observations of behaviour in drawing conclusions, but they were consistent with what we observed on ridealongs. The link between surveillance and socially desirable behavior is well developed, which helps explain these changes in a technical sense. We would also note that more profound changes to officer behaviour seem unlikely, at least in the short term, given that the capacity for consequential surveillance is limited. Al Reiss (1971, p. 24) remarked decades ago in reference to field observer ridealongs that it was, 'Sociologically naive to assume that for many events, the presence or participation of the observer is more controlling than other factors in the situation.' This could easily apply to the potency of body-worn cameras on police (and civilian) behaviour. Even if the presence of cameras alters officers' motivation to behave differently, it does not do much in and of itself to raise the skill level of the officer in doing so. And some habits are hard to

extinguish. Thus more pronounced effects of this technology on behaviour may be incremental over long time periods.

## Discussion and conclusion

We have applied a technical model of organisations to the people-processing, people-changing, and environment-changing functions of body-worn cameras to make sense of their uneven effects in a single police agency. Our analysis revealed variation in the extent to which the technology of body-worn cameras was developed (that is, variation across different functions of the technology), and variation in the receptiveness/preparedness of the organisation itself (both in terms of structure and culture). The patterns we observed were largely consistent with what the technical perspective would predict.

In Sunnyvale, cameras strengthened those people-processing features of the organisation that had clear goals and clear means for their accomplishment. Cameras helped officers write more accurate reports, especially when it came to writing detailed narratives on complex situations. They also encouraged officers to adhere more strictly to laws and policies. Choosing to do so provided officers an efficient means for handling different types of cases, such as traffic violations, without having to consider carefully the individual circumstances of each. It was also a way for officers to make themselves or the department less vulnerable to claims of not behaving impartially. Another people-processing benefit of body-worn cameras was the video evidence they provided, which helped make the complaint process more effective and efficient by mollifying civilians who felt they had been mistreated. Moreover, the environment-changing feature of body-worn cameras, based on the rational reaction to the feeling of being watched by others, provided a straightforward mechanism for improving conduct within the immediate confines of police-citizen interactions.

In comparison, the people-changing functions of body-worn cameras were poorly understood and required the construction or strengthening of nonexistent or weakly developed structures and processes. Training and supervision are not well developed technically, which makes it challenging to apply cameras in ways that are likely to deliver predictable and desirable results. There is currently little consensus on which goals are most important for officers to accomplish in their many different types of encounters with the public and which strategies are most effective for their achievement (Willis 2013). Moreover, in Sunnyvale, the formal structures and informal culture were alien, irrelevant, or even hostile to the use of body-worn cameras to develop officers professionally by changing their skills and will to perform to better standards of workmanship.

Nor had the agency sought to overcome these technical challenges. In Sunnyvale, a key reason the department's leadership implemented cameras was to improve training, but it offered its instructors little in the way of guidance or support on how they might be used to change existing practices. In addition, the culture was generally hostile to proactive use of video footage for improving officer performance (to avoid embarrassing officers), and the organisation did nothing to anticipate this resistance or shape it. Similarly, while leadership eventually gave supervisors direct access to video footage, it did not establish a clear vision for body-worn cameras, nor hands-on instruction on how they could be used to overcome traditional challenges to effective supervision. Leadership was also unclear about how instructors or supervisors would be rewarded for exploiting cameras in innovative ways. Had we studied a department with higher innovation ambitions (e.g. a stronger commitment to problem-oriented policing), and more experience in adopting technological innovations with potential for radical transformation of policing, we might have observed more concerted efforts to advance new people-changing uses of cameras. Of course, it is possible that two years is too short a time-frame to expect significant change.

According to the technical framework, significant change is most likely to occur should civilians start to put pressure on police departments to use cameras in ways that help officers exercise good judgment in achieving desirable results in their everyday encounters. This would be a demand for a level of professionalism that goes far beyond the current standard of preventing misconduct. In response

to this pressure, some departments could be expected to experiment with new and innovative approaches to training and supervision to seek improvements in their technical effectiveness.

Improvements to the use of cameras in these areas would also be facilitated through the development of a rigorous body of scientific research for testing the best training means for accomplishing desired ends. There is some evidence to suggest that body-worn cameras can improve training through an intensive process of experiential learning and reflection (Phelps *et al.* 2016), but if police departments are to pursue the technical promise of this approach, it will require additional validation. One possibility would be rigorous evaluations, such as randomised controlled trials, comparing different camera-enhanced training ‘treatments’ and their effects that also take into account the organisational context in which trainees must work (Mastrofski 2007:10).

There are several important limitations to our research, including the impossibility of generalising from a single agency and our inability to compare changes pre- and post- body-worn camera implementation based on direct observation. Being on site before implementation would have helped us make finer-grained assessments of their effects than having to rely on police officers’ memories.

Finally, we can speculate that a different type of department could have produced a different result. For example, in a larger department where it is more difficult to have detailed knowledge of subordinates’ behaviour, we might expect the organisation to rely more heavily on using body-worn cameras to improve accountability in a technical sense. Furthermore, while research suggests that technologies are generally implemented ad hoc without much strategic planning (as we discovered at Sunnyvale) (Strom 2017, p. 6–31), an agency that was truly dedicated to making body-worn camera technology function in all regards in relation to its organisation structures and culture could deliver very different results from those we observed.

Despite these limitations, an important strength of our study is that it contributes to a limited knowledge-base of the effects of body-worn cameras on police organisation and practice. Future research might compare the implementation of body-worn cameras in several different agencies on the performance dimensions we identify here as theoretically relevant. This could provide useful insights into the diverse ways that police agencies may be using cameras to enhance their technical performance, and some of the strategies which are most promising in overcoming the technical challenges they present.

## Notes

1. These are the latest nationally representative statistics currently available. In 2016, the Bureau of Justice Statistics conducted a Body-Worn Camera Survey Supplement to the Law Enforcement Management and Administrative Statistics (LEMAS) Program but, as of this writing, the results are not yet available
2. We do not divulge the location of the agency and only report ranges for characteristics of the agency and its environment to mask its identity.
3. Of the six who declined, there was one commander, three detectives, and two patrol officers. We did not ask those who declined to participate why they chose to do so, although several offered a reason. These included being too busy, preferring to patrol alone, and safety concerns. This did not give us cause to suspect that they would have told us something markedly different from those who agreed to cooperate. Another patrol officer wished to participate in the study but was unable to do so due to medical leave.
4. Two officers declined ridealongs because they were uncomfortable with an observer in the car. The other two were concerned about in-car safety issues.

## Disclosure statement

No potential conflict of interest was reported by the authors.

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