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Item Type	Article/Review
Authors	Koen, Marthinus C.; Newell, Bryce Clayton; Roberts, Melinda R.
Citation	Koen, M. C., Newell, B. C., & Roberts, M. R. (2021). Body-worn cameras: Technological frames and project abandonment. <i>Journal of criminal justice</i> , 72, 101773.
DOI	<a href="https://doi.org/10.1016/j.jcrimjus.2020.101773">10.1016/j.jcrimjus.2020.101773</a>
Publisher	Elsevier BV
Rights	© 2020 Elsevier Ltd. All rights reserved.; Attribution-NonCommercial-NoDerivatives 4.0 International
Download date	23/10/2024 17:32:24
Item License	<a href="https://www.elsevier.com/tdm/userlicense/1.0/">https://www.elsevier.com/tdm/userlicense/1.0/</a>
Link to Item	<a href="http://hdl.handle.net/20.500.12648/7886">http://hdl.handle.net/20.500.12648/7886</a>

## **Body-Worn Cameras: Technological Frames and Project Abandonment**

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### Abstract

This case study examines the technological frames of administrators and users regarding the implementation of body-worn cameras at the *Pennybridge Police Department*, a mid-sized police organization (<300) in the Mid-Western United States. Using semi-structured interviews, a patrol survey, and ride-along observations; we found that different actors based on their hierarchy and function framed body-worn cameras differently over time. Administrators implemented body-cameras to protect officers from frivolous complaints while at the same time holding them accountable for their behavior. Users felt, for the most part, that the technology had become a “gotcha mechanism” as body camera footage was used to placate the public, monitor officer behavior, and charge them with minor infractions. Adding to their frustrations, users felt increasingly dispirited by the technical shortcomings of the cameras and the backend storage system provided by the vendor. At the same time, administrators were vexed by the financial and logistical burden of the program, ultimately leading to project abandonment and a search for a new system. Our findings have important implications for policymakers and future research.

**Keywords:** body-worn cameras, police technology, police perceptions, technological frames



## **Body-Worn Cameras: Technological Frames and Project Abandonment**

In response to numerous high-profile police-involved killings of unarmed black citizens in the United States, policymakers and practitioners have turned to body-worn cameras (BWCs) as a potential panacea to public disquietude and a perceived abundance of police violence (Gaub et al., 2016; Koen & Willis, 2017). In 2015, the President's Task Force on 21st Century Policing alleged that BWCs would improve police transparency and, thus, made approximately \$40 million available to help agencies pilot and implement cameras (White & Coldren, 2017). Body-worn cameras became increasingly popular as small and large departments across the United States piloted and implemented them (Storm, 2017; Hyland, 2018; Lum et al., 2019). In 2013, LEMAS data indicated about a third of U.S. police agencies had been using BWCs (Bureau of Justice Statistics, 2013). In 2016, LEMAS data showed that about half of sheriff's offices and 60% of municipal police departments had fully adopted them (Hyland, 2018), indicating their rapid diffusion.

Program evaluations swiftly followed, focusing primarily on police outcomes and perceptions, while some considered their implementation (Lum et al., 2019; White & Malm, 2020). BWCs have been associated with precipitous reductions in frivolous complaints filed against police officers (White et al., 2019; Malm, 2019; White & Malm, 2020), as the footage had become an instrumental part in the internal investigations process. However, research still is unclear about the processes that drive these reductions as they could be attributed to increased police accountability, professionalism, citizen apprehension to file complaints, or a combination of these factors (Lum et al., 2019). Similarly, police use-of-force has also been well-examined; indeed, findings seem to generally support the notion that police use-of-force (excessive and legitimate) decreases with the implementation of BWCs (Malm, 2019; White et al., 2019).

However, these findings have yet not been convincingly replicated across different situational contexts, and questions remain (Lum et al., 2019).

A handful of studies have examined processes associated with the implementation of BWCs (e.g., policy creation, organizational structures and practices, and internal accountability; Kyle & White, 2017; Koen et al., 2019; Koen & Mathna, 2019) and stake holder decision-making (White et al., 2018). Others considered outcomes related to civilian perceptions of BWCs (White et al., 2017; Sousa et al., 2018), officer activity and passivity (Yokum et al., 2017; Wallace et al., 2018), officer safety (Ariel et al., 2016), and how police officers interact with citizens (Voight et al., 2017). Scholars have come to a consensus that more research must be conducted regarding these outcomes and processes as they would provide more complete, nuanced insights into the consequences of adopting BWCs (Lum et al., 2019).

Perceptual studies have grown significantly (+/- 30) with the proliferation of BWCs across police agencies in the United States and abroad (Gaub et al., 2020). The research suggests that, overall, officers seem sanguine about BWCs, but some mixed results exist where police officers have articulated negative views (Stokes et al., 2013; Smykla, 2015; Gaub et al., 2016; Pickering, 2020; Newell, 2017; Newell & Greidanus, 2018; Phillips et al., 2020). The most consistent perceptual factor is the perceived evidentiary value of BWCs (White & Malm, 2020), as officers find the footage influential in painting a complete picture of citizen encounters, facilitating criminal convictions, and/or exonerating officers during internal investigations (Pickering, 2020; Newell, 2019: 67; Newell & Greidanus, 2018: 1575). At the same time, some officers have reported feeling that members of the courtroom over-rely on BWC footage at the expense of officers' credibility. These officers feel that the worth of their "word" had been diminished by this technology (Koen & Willis, 2019; Pickering, 2020). Furthermore, a growing

number of studies are showing that BWCs have prompted some officers to second-guess their decisions to invoke the law and/or use coercive force, negatively impacting their overall perceptions of the technology (Fallik et al., 2018; Koen & Mathna, 2019; Gaub et al., 2020b; Newell & Greidanus, 2018).

Several studies have revealed that officers generally become more positive about BWCs as they continue to use the technology (McLean et al., 2015; Gaub et al., 2016; White et al., 2018b; Koen & Willis, 2019). Others suggest that such positive perceptions are the result of a “honeymoon phase” that phases out over time turning views more negative (see White & Malm, 2020). Some of these studies also highlight that perceptions largely tend to depend on contextual factors such as the agency, the type of technology, and how long the cameras had been used, implying the need for further consideration of police perceptions that go beyond cross-sectional surveys focusing predominantly on patrol officers (see White & Malm, 2020).

While research has shown predominantly sanguine perceptions of BWCs, there have been a handful of cases where BWC programs have led to eventual project abandonment (Manna, 2017; Kindy, 2019; Lockhart, 2019). This concept has been defined as a form of information systems failure “...when management decides, for whatever reasons, to discontinue temporarily or retire permanently (1) an uncompleted project or (2) a system in operation (Ewusi-Mensah & Przanyski, 1991).” (Lesca & Caron-Fasan, 2008: 373). It appears that some smaller (e.g., Wahoo, NE; Clarksville, IN) and mid-sized police agencies (e.g., Jeffersonville, IN) have decided to discontinue their BWC programs due to the high cost of the backend storage and maintenance of the video data (Callahan, 2016; Manna, 2017; Kindy, 2019; Lockhart, 2019), and at least one has shelved their camera system due to the administrative cost of responding to freedom of information requests for camera footage (Lucia, 2014). In some cases, the legal

parameters for how long footage must be kept in conjunction with the overall cost of storage has made it less feasible for some agencies to continue their programs (Manna, 2017).

While the scholarly community has not been blind to this issue (White, 2014; Lum et al., 2019; White & Malm, 2020), BWC research is yet to focus intently on the concept of project abandonment and how officers across an entire agency make sense of it, which is the purpose of this study. Leveraging semi-structured interviews, a survey, and observations, the present study adds to the BWC knowledgebase, examining retrospectively how officers across a mid-sized, urban police organization in the Mid-Western United States framed BWCs from the time of implementation to project abandonment. Applying Orlikowski & Gash's (1994) technological frames model, we highlight which factors were instrumental in shaping different officers' perceptions of BWCs from implementation to abandonment within the agency a few years later. This article builds on prior research using the technological frames framework to explain police officers' perceptions of BWCs (Koen & Willis, 2019; Newell & Greidanus, 2018; Saulnier et al., 2019) and offers insights into the thought processes of police decision makers and BWC users.

### **Technological Frames**

Orlikowski & Gash (1994) formulated a socio-cognitive theoretical framework to elucidate how organizational members understand the implementation of information technology over time. Borrowing from organizational frames theory (see Berger & Luckmann, 1967) and focusing intently on technology instead of organizational strategy, they explained that individuals make sense of a technology over time through a process of interpretation and interaction; which they referred to as "technological frames" (p. 175). This position posits that how people think about a technology will impact the way they act towards it in a cyclical manner. The framing process unfolds in the background indefinitely as people continue to work with information technologies (Orlikowski & Gash, 1994: 176). Transpiring on an individual

basis, first impressions of technologies tend to be most instrumental in shaping the overall trajectory of technological frames as they are reinforced early-on in the framing process (Orlikowski & Gash, 1994; Davidson, 2006).

Orlikowski and Gash (1994) posited that individuals can frame a technology in three distinct “domains” simultaneously (p. 183). The *nature of technology* domain refers “to people’s images of the technology and their understanding of its capabilities and functionality” (Orlikowski & Gash, 1994: 183). This domain encompasses the interplay of thoughts and experiences regarding technical aspects such as the features, complexity, and functionality of a technology. For example, when police officers think about the durability, battery life, or storage capabilities of the BWCs they use (Gaub et al., 2016), they are framing BWCs within this domain.

The *technology strategy* comprises how organizational actors understand the motivations and execution of the implementation of a technology (Orlikowski & Gash, 1994: 183). When officers think that commanders implemented BWCs to constantly monitor them to get them in trouble for minor policy violations (Koen & Willis, 2019), they are framing this domain. Another example might be how command staff at an agency think about the creation and execution of the BWC policy (White et al., 2018b).

Lastly, *technology-in-use* refers “to people’s understanding of how the technology will be used on a day-to-day basis, and the likely or actual conditions and consequences associated with such use” (Orlikowski & Gash, 1994: 183). For example, if police officers begin to see the evidentiary benefits of BWC footage within the context of both criminal cases and citizen complaints (Gaub et al., 2019).



Consistent with the socio-cognitive paradigm, Orlikowski & Gash (1994) recognize that individuals belonging to communities share certain suppositions and presumptions about aspects of their reality (Porac et al., 1989). In application of their theory, they explain that members of an organization who share similar positions within the organizational *hierarchy* and in their interaction with a technology—or *function*—will have analogous frames regarding organizational strategy, of which technology and technological change is a part (Orlikowski & Gash, 1994: 178). These *relevant social groups* of individuals can share frames across all three domains. This aspect of the theory is important, as there are likely multiple relevant social groupings within organizations, regardless of industry. When there is a lack of alignment of frames, or “incongruence” in the frames between relevant social groups, organizations are likely to experience negative implementation outcomes (e.g., misuse or abuse) concerning a specific technology (Orlikowski & Gash, 1994). When frames are congruent, a technology will be used more closely as intended.

Orlikowski & Gash (1994) were unambiguous that “congruent frames” are different from “identical frames,” meaning that technological frames do not have to be the same between relevant social groups for them to be considered “congruent.” Subsequent research has since found support for this notion, showing that when frames are not in direct conflict with one another on certain domains, an organization might experience more positive implementation outcomes (Davidson, 2002; Davidson & Pai, 2004; Davidson, 2006; Koen & Willis, 2019).

Since its inception, technological frames had set an important standard for socio-cognitive exploration of technological change, as research across academic disciplines has relied on this framework to explain how people have made sense of the acquisition of new information technologies in myriad organizational settings (McLoughlin, 2000; Lin & Cornford, 2000;

Gallivan, 2001; Khoo, 2001; Davidson, 2002; Davidson & Pai, 2004; Davidson, 2006), including criminal justice (Chan, 2001; 2007; Koper et al., 2014; Koen & Willis, 2019; Newell & Greidanus, 2018; Saulnier et al., 2019).

### **Research Methods and Site**

Much of the existing research conducted on technological frames have relied on qualitative case studies using interviews and observations as their primary sources of data (Davidson & Pai, 2004; Davidson, 2002; 2006). Indeed, Orlikowski & Gash (1994) recommend this strategy as an optimal way to understand different individuals' thoughts and actions toward a new technology. Thus, this study relies on semi-structured qualitative interviews as the predominant data source, complementing these interviews with field observations and administration of a survey questionnaire, to understand how police officers' technological frames of BWCs were shaped at the *Pennybridge Police Department (PPD; pseudonym)* since implementation of the cameras in September of 2014.

### **Pennybridge Police Department**

While it would have been ideal to collect data at a police department before and after implementation (like Gaub et al., 2016) and project abandonment, we were unable to identify such a site that was within a reasonable driving distance of our locations given resource constraints. We therefore sought an agency that had been using body-worn cameras for at least one year (like Koen et al., 2019). Such an organization would likely be ripe with insights concerning the implementation and the effects body-worn camera might have had on the organization over time (Rossi et al., 2004: 236). Moreover, retrospective data has been used in the lion's share of technological frames research across disciplines, especially when it has been paired with additional data collection methods (Lin & Cornford, 2000; Davidson & Pai, 2004; Davidson, 2002; 2006; Koen & Willis, 2019). Most importantly, we sought out an agency that

had already abandoned or was in the process discontinuing their existing BWC program. Because we promised the PPD administration confidentiality, we only provide a general description of the agency and jurisdiction.

The agency, which had used their current BWC system for 3.5 years at the start of data collection, was a mid-sized, urban police department located in the Mid-Western United States. Like many agencies, they evaluated several types of BWC brands in late 2013 and early 2014 (e.g., Axon, VIEVU, and “ProCop”) before making their implementation decision. They implemented ProCop (we use a pseudonym here to protect the identity of the police department), body-mounted units that were typically attached to a breast pocket or shirt placket with an “alligator clip.” The camera unit was attached to a battery pack with a short cable that officers kept inside one of their breast pockets. To house their footage, PPD elected to use an on-site server that ran an application sold by ProCop, known as ViewSafe (*pseudonym*). ViewSafe allowed PPD employees to use desktop computers connected to the agency’s intranet to access footage stored on the server. All footage was stored on the on-premises server for three years, after which “nonessential” footage<sup>1</sup> was purged. Two credential levels provided access to officers: “limited” or “unlimited.” Officers with “limited” access could only view footage recorded with their own camera units (e.g., patrol officers), while officers with “unlimited” access could see anyone’s footage and conduct myriad administrative tasks related to BWC footage (command staff, supervisors, investigators, internal affairs, IT, public relations). At the time of data collection, PPD was in the process of abandoning their existing BWC program with hopes of replacing it with a new system.

According to official crime statistics, in 2017, PPD received, on average, 180,000 calls for service with higher rates of violent crime (6%) and property crime (31%) than similar

jurisdictions within the same state. According to U.S. Census Bureau data (2018), PPD served a population of roughly 120,000, with 82% of the population being white, 12% black, 3% Latinx, and the rest divided amongst other groups. Moreover, about 23% of the Pennybridge population live under the poverty line and the median household income is below \$37,000.

The Pennybridge Police Department was a typical mid-sized agency likely to implement BWCs (Reaves, 2015), employing approximately 300 sworn officers, about 25 civilians, and others in specialized units. According to our patrol division survey (n=101; which is described in more detail in the section below), 83% percent of officers identified as conservative on the political spectrum, 14% as moderate, and 3% as liberal. The mean level of experience at PPD was 14.43 years with a standard deviation of 9.37 years. Regarding education, 58% of officers possessed a baccalaureate degree or higher with 17% having an associate degree, and 25% with a high school diploma. A staggering 96% of officers identified as white, with the remaining 4% split between black (2%) and multiracial (2%). Similarly, a large proportion (92%) identified their sex as being male, while 8% reported female. Lastly, the average age was 39.36 with a standard deviation of 9.8 years.

According to command staff at PPD, they were at “100% implementation,” having their entire patrol division equipped with BWCs. This included a total 149 officers comprising patrol officers (127), patrol supervisors (19) and patrol shift commanders (3). According to the PPD BWC policy, all citizen encounters had to be recorded, BWCs had to be turned on once officers were dispatched to a run, and supervisors conducted monthly run-card audits to make sure that officers were recording citizen encounters in accordance with policy.<sup>2</sup>

### **Research Design**

Data collection commenced in early Spring and lasted through the Fall of 2018 after receiving IRB approval. We initially met with Pennybridge command staff to determine our

sampling frame, defined as “any officer or civilian having involvement with body-worn cameras.” This included wearing the BWCs; reviewing, using, or otherwise interacting with footage; or taking part in BWC implementation or policy formation. Consequently, our sampling frame comprised 223 individuals (including one civilian).

We conducted semi-structured interviews with 106 individuals across the entire department, each lasting approximately 42 minutes on average. We interviewed 17/17 commanders, managerial, and administrative personnel; 14/19 first-line supervisors; 25/60 randomly selected investigators; and 50/127 randomly selected patrol officers. Interview questions focused primarily on the three domains outlined by the technological frames discourse, however, some were also aimed at the roles of particular officers within the context of BWCs. We relied on six different types of interview guides directed to the chief, command/administrative staff, IT Officers/staff, first-line supervisors, detectives, and patrol officers. Questions and subsequent probes were structured to assess how frames evolved over time (e.g., from the time of implementation to the time of data collection). For example: “Body worn cameras provide a recording of an event that others can then view later. In what ways has wearing a body-worn camera changed the nature of supervision in the department? [PROBE] In what ways has it changed your relationship with your particular supervisor?”

To gain quantitative and descriptive insights, we asked the entire patrol division (N=146)—comprising all patrol officers and patrol supervisors but excluding the three shift commanders—to take a 39-item electronic survey administered through Qualtrics, resulting in 101 valid and complete responses (for a 69% response rate). On average, officers spent 18 minutes completing the survey, which addressed demographic information and the three technological frame domains. Some questions were created from scratch and some were gleaned

from previous research (Gaub et al., 2016; Koen & Willis, 2019; Newell and Greidanus, 2018; Chan 2001). Means reported in the findings below are based on responses to five-point Likert-scale questions, from 1 (positive responses, e.g., “strongly agree”) to 5 (negative responses, e.g., “strongly disagree”).

Observations of citizen encounters were made during ride-alongs with 25 randomly selected patrol officers who also participated in the semi-structured interviews. Ride-alongs lasted an average of 3.75 hours and resulted in a total of 149 usable citizen interactions.<sup>3</sup> Ride-along data comprised conversations between officers and researchers in addition to interactions between officers and citizens. Data regarding citizen interaction were coded for myriad factors such as initiation (e.g., dispatched, officer initiated), citizen behavior (e.g., cooperative), immediate outcomes (e.g., report taken, citation written, arrest made), stop type (e.g., speeding), and officer impressions of the interaction afterward to name a few. As the results we report here are part of a larger project regarding the implementation and abandonment of BWCs, observational data, in the case of this paper, serves to contextualize interview and survey data and to allow for a more comprehensive understanding of how technological frames were shaped over time.

The quantitative survey data were downloaded from Qualtrics and analyzed using SPSS. Coding interview transcripts and field notes occurred deductively using a browser-based analytic application called Dedoose. We first coded all data based on the three domains. During subsequent rounds of coding, each of these groupings were disaggregated further into various thematic groupings using sub-codes (Miles et al., 2014). To ensure reliability and validity, content analysis of the interview data was independently read, coded, grouped, and analyzed by

three different people. Lastly, we relied on multiple data sources, solicited multiple perspectives on BWCs, and presented our report to PPD command staff to validate its credibility.

## **Findings**

### **Relevant Social Groups**

After mapping each of the 106 interview-respondents' technological frames, we found that views coalesced around two primary relevant social groups (that we refer to as *administrators* and *users*), based on their hierarchy and function. Despite at least one quantitative study finding that rank and other demographic differences have not had significant effects on perceptions of BWCs in other agencies (Phillips et al., 2020), we find that these social groupings usefully differentiate between the different frames held by individuals at different levels of organizational hierarchy within the agency we studied. Table 1 presents a breakdown of which personnel were included into the two relevant social groups.

[TABLE 1 ABOUT HERE]

“Administrators” consisted of the Chief, command staff (including the three patrol lieutenants and the IT captain and lieutenant), Internal Affairs, and the two public relations officers. These officers' hierarchy (social and bureaucratic position in the organization) was characterized by holding leadership, management, or administrative roles. Moreover, while some of these officers did not necessarily hold high ranks (e.g., public relations officers held the rank of sergeant and officer) all these officers identified themselves as being part of the “administration.” All administrator offices were housed in one area within the department building, away from the patrol and investigation divisions. These officers also worked “traditional schedules” (e.g., Monday through Friday from 8am until 5pm) and regularly

interacted with one another outside of work. Administrators were very much culturally connected, much like *management cops* (see Reuss-Ianni, 1983). Regarding their function (or interaction with BWCs) administrators had little direct contact with the use of BWCs, sometimes reviewed footage, and were involved in the implementation and rollout of BWCs.

“Users” comprised patrol officers, the rest of the IT Unit, patrol supervisors, and detectives. These officers, for the most part, held lower-ranking positions in the department with no ranks exceeding sergeant, much like *street cops* (see Reuss-Ianni, 1983). Moreover, these officers all worked non-traditional hours, on one of three shifts, working four days followed by two days off. Moreover, the patrol and investigative divisions of the department were located next to each other, allowing social interaction between these officers. Users also had far more frequent interaction with BWCs and BWC footage than the administrators. Users’ interactions with the front- and backend of BWCs were also mandated by departmental policies.

### **Body-Worn Camera Strategy**

When individuals frame an innovation within the *technology strategy* domain, they are thinking about how and why that technology was implemented (Orlikowski & Gash, 1994). Technological frames research has found that individuals belonging to different relevant social groups may share different conceptions about the motivations behind and the effectiveness of the implementation of a new technology (Orlikowski & Gash, 1994; Davidson, 2002; 2006).

### *Administrators*

All administrators cited one important high-profile event (the “firefighter incident”) as the reason behind the implementation of BWCs. In 2013, two PPD officers stopped a man, later identified as a local firefighter, riding a bicycle and the interaction became heated. Afterwards, the firefighter leveled allegations against the officers, resulting in a rancorous, drawn-out lawsuit that was eventually settled. Against a backdrop of fears that society at-large was becoming



increasingly critical of the police, administrators felt that the firefighter event was the first of a nascent multitude of events to come, posing a significant threat to police-community relations and becoming a major financial burden.

Reflecting on the firefighter incident, administrators identified the lack of transparency during that encounter as the factor in making it so burdensome. Therefore, at the time of implementation, administrators cited the need for increased transparency as the predominant reason for the adoption of BWCs, seeing them as beneficial in two interrelated ways: to hold officers accountable for their behavior and to protect officers from complaints. Consequently, PPD policy mandated that footage be used to investigate citizen complaints, officers record every citizen interaction, and supervisors conduct run card audits. Furthermore, citizens who filed official complaints against officers would be charged with perjury if BWCs footage proved their claims false.

While PPD administrators viewed users with little suspicion, they were not blinded by over-credulous perceptions of them either. Administrators felt some officers took advantage of the lack of transparency during citizen encounters. Body-worn cameras according to administrators would present an obstacle for those officers who were sometimes tempted to make nefarious decisions and would serve as a gesture to the community that PPD will hold its officers accountable to departmental and national policing standards.

*[The police] had a reputation, up until not long ago, that we will kick your ass instead of arrest you. There are a lot of people in patrol who still believe in that. The cameras are gonna stop those people to think twice before they rough someone up. [Administrator 1]*

While BWCs were an accountability tool to administrators, all 15 of them touted the technology's protective abilities. To them, most complaints lodged against PPD officers had

been frivolous and, therefore, their perception was that BWCs would help exonerate officers from baseless complaints, which is consistent with existing literature (White et al., 2018b; Koen & Willis, 2019).

### *Users*

At the time of implementation, like administrators, users felt that the firefighter incident, pressure from the community, and national trends in public perceptions of police were the main motivations behind the implementation of BWCs at PPD. However, implementation perceptions differed significantly from that of the administrators in other aspects. Where administrators saw BWCs as a protection tool and an accountability mechanism, users expressed concern that BWCs were implemented to monitor their behavior. They feared that administrators might use the footage as a “gotcha mechanism” (see Koen & Willis, 2019; Wy & Koen, 2019) for “witch hunts” to inculcate them for minor policy infractions. In interviews, officers expressed views like the following:

*I had some serious concerns about how the body cameras were going to be used. Are they going to get us for every little thing? In a sense, there would be no privacy for policemen. Like, me just having a conversation with one of my coworkers would be 100% completely recorded and documented for eternity in the servers of the City of [Pennybridge], on both of our cameras. Now the [administrators] get to see what we are talking about? At which point are they going to find fault with stuff we said to each other? [User 1]*

Over time, user frames ebbed and flowed as they came to terms with the new technology. For the most part, during the initial 3-12 months after implementation, all but six users felt administrators’ intentions were motivated by protecting officers as opposed to getting them in trouble for minor policy infractions as fears were not realized (like Koen & Willis, 2019). However, two factors swayed user frames in the months and years that followed, causing 56/91

users to come to view BWCs primarily as a “gotcha mechanism”. Figure 1 shows that survey data supports this notion as two-thirds (68/101) of patrol survey respondents indicated that BWC use was somewhat or very likely to lead to increased numbers of disciplinary actions against officers (m=2.20; SD=1.175).

[FIGURE 1 ABOUT HERE]

The first factor responsible for swaying perceptions was known as “the needle event,” a highly publicized incident (two years after roll-out) where four officers were disciplined publicly for behaving aggressively and using excessive force against a detained suspect.

*A while ago, some officers was involved in a situation that was the year before last year, in which they was responding to a burglary call. A guy had broken into a garage. They responded. It was four officers. They catch the guy in the garage, and the K-9 officer proceeds to pat the guy down and gets stuck by a dirty needle. When he got stuck, of course he got mad, knocked the guy to the ground and proceeded to dog-curse him pretty good. The whole time this is going on, cameras are on. One of the officers just stood there, while the others also cursed him out. By the time this was all said and done, the administration was so convinced that this guy just got his ass kicked for nothing, and he didn't. There was no injuries. Through this whole thing, in [administrators'] quest to back-up their story, to give in to the public like that. That really made a lot of us see their true intentions.  
[User 2]*

The BWCs footage was at the center of this controversy as some in the department and the community felt the officers were justified in doing what they did while others felt the opposite way. Despite subjective perceptions of the outcomes of this event, it did impact the perceptions of many users in the organization.

Implemented shortly after the needle event, the run-card audit policy also played an integral role in shifting user frames. The policy required supervisors to do monthly audits of officer videos to ensure that officers were activating their devices in accordance with policy.

Supervisors would compare the general number of videos uploaded to officers' ViewSafe accounts to the number of runs an officer took monthly. If major discrepancies existed, there would be further investigation and, in some cases, disciplinary action would be taken. Due to this policy, some users felt that supervisors would be forced to over-rely on the footage and that the BWC program was indeed meant to be a "gotcha mechanism."

Administrators were motivated to adopt BWCs to document police-public contacts; limit complaints, potential legal liability, and financial liability; and improve police-community relations. These views dominated administrator frames over time and were reflected in the department's BWC policy. User frames ebbed and flowed based on their experiences over time. They were initially anxious and apprehensive, fearing that BWCs would be used as a "gotcha mechanism." This is understandable as BWCs are clearly a normative technology—a "technology with intentionally built-in mechanisms to influence people's behavior" (Koops, 2008: 158). In subsequent months, and consistent with existing research (McLean et al., 2015; Gaub et al., 2016; White et al., 2018b; Koen & Willis, 2019), it appeared that initial anxiety had begun to give way to more optimistic outlooks on the technology. However, users were uncertain how to process the way BWC footage was used in response to the "needle event" as many of them felt administrators drew inexact conclusions from the video. This event seemed to be what we refer to as a *flashpoint*: a "change trigger" (see Davidson & Pai, 2004: 481) that drastically and abruptly changed user frames. Feelings of distrust and disquietude were compounded as administrators rolled out the run-card policy shortly after the incident. Users ultimately became disillusioned by the idea of BWCs as they continued to use them in accordance with policy to avoid disciplinary action.

### **Body-Worn Cameras in Use**

The technology-in-use domain involves how individuals think about the day-to-day use of a technology and its potential consequences (Orlikowski & Gash, 1994; Davidson, 2002; 2006). This can often be a primary source of incongruence, as different relevant social groups often have different interactions with a technology due to their function and hierarchy (Orlikowski & Gash, 1994; Davidson, 2006).

### *Administrators*

Administrators saw BWCs as a tool that would potentially increase transparency, which was reinforced as administrators reported that BWCs had indeed caused officers to swear less, be “a little nicer,” or otherwise modify their behavior. Similarly, administrators lauded the evidentiary value of this technology to protect officers, investigate use-of-force incidents, and enabling release of video data to the public, which is consistent with extant BWC research (White et al., 2018a; White et al., 2018b; Koen et al., 2019; Koen & Willis, 2019; Koen & Mathna, 2019).

Administrators had relatively little day-to-day interaction with the technology, and, therefore, it is reasonable that their initial frames were largely reinforced over time. However, they did perceive additional, unexpected benefits to the technology. For example, part of administrator duties was to make final determinations concerning the legitimacy of complex, unclear, or potentially dubious use-of-force cases (typically passed up the chain of command by uncertain supervisors). Administrators (9/15) found that BWC footage made it possible to gain a deeper understanding of what happened in those situations, ultimately making it easier to determine the appropriateness of what happened.

*Your decision was based solely on what information had been vocalized to the investigating supervisor, that he or she then wrote. An officer told you this. Officer B told you this. You maybe had a witness or two and then you had the suspect. On a good day—and I’ll give you a hint, we don’t have many good days*

*in this line of work—everybody’s story would match up. But you don’t always have that, so we are basing our decisions on how the supervisor figured it went and the evidence that was included in the report. So, we are far-removed from the whole incident. The video has given us a tool that we didn’t have. You can watch the use-of-force. If there was things that come up and you wanna take corrective action, it’s a lot easier to fix an issue when there’s definitive proof. [Administrator 2]*

Administrators (6/15) also explained that BWCs had aided their work in communicating with the public about contested police-involved incidents and felt it had potentially reduced the skepticism of the public toward the police. Over time, administrators began to see increased value in releasing such footage to the public before it was picked up by the media. As a result, the release of footage to the public evolved from being a reactive strategy, to damage control, to becoming a preemptive tool for maintaining community relations.

*We’ve gone out and we have released video and explained to the community why an officer did certain things... It’s people, just they’re concerned. They wanna know exactly what happened. When you know that your agency’s gonna do that every time I think that that builds rapport with the community. [Administrator 3]*

Administrators felt that it gave them the opportunity to control the narrative, explain the legality and practicality of the discretion used in the video, and served as a gesture to the public that PPD had nothing to hide and was forthcoming.

### *Users*

During the time of implementation, users expected BWCs to be used to persistently monitor their behavior to get them in trouble for minor policy infractions. However, in the months after implementation users (83/91) realized that the footage would often confirm their statements during use-of-force, formal, and informal complaint investigations, which is consistent with extant BWC research (Newell, 2019: 67; Clare et al., 2019; Gaub et al., 2016:

283; Goodall, 2007; Jennings et al., 2015; Pelfrey and Keener, 2018; White et al., 2018).

Moreover, 53% of survey respondents ( $m=2.69$ ;  $SD=1.164$ ) felt that BWC use would lead to a decrease in citizen complaints.

Similarly, users (61/91) began to appreciate the evidentiary value of BWC footage in criminal matters as they felt it would help in filing charges. Survey data echoed this perception as 72% of respondents ( $m=2.21$ ;  $SD=1.125$ ) felt that BWC footage would provide better evidence of criminal conduct for use by prosecutors. Interestingly, however, only 48% ( $m=2.69$ ;  $SD=1.198$ ) indicated that BWC use was at least somewhat likely to result in increased numbers of criminal *convictions*. Users (and administrators) explained during interviews that in a criminal trial, the video is open to interpretation by different people with diverse perspectives (defense attorneys, jury members). Moreover, they felt that the evaluation of evidence is more thorough when deciding whether to convict someone of a crime rather than only charging them. At the same time, users (57/91) did laud the ability of BWCs to contextualize crime scenes and/or citizen interactions in way that police reports could not.

We arrived on scene where a female got into a domestic dispute with her baby-daddy; he hit her in the head with the butt of his gun. They used my partner and my video to show the damage. Showed her gash, that he split her head wide-open. You couldn't even see her face. All you could see was teeth because she was covered with blood. Her kid was there as we arrived; you could see the look of terror on his face. [User 3]

Patrol officers are typically the first on scene, thus their footage can provide a more pristine depiction of what had occurred, which many users felt could offer useful context in

court. However, 23/91 users warned that BWCs would sometimes deter victims and bystanders in low socioeconomic neighborhoods from talking to officers. These citizens, according to users, felt that if they shared information about a crime, there would be a public record of them being “snitches.”

Indeed, users found the footage helpful in pressing charges (and, to a lesser extent, gaining convictions), but they did not view it as an investigative tool. Users did not sift through footage to follow-up on hunches or seek out new leads as found in previous research (Koen & Willis, 2019). While many respondents (72/91) felt that footage had such potential, only 8 claimed to have ever used footage for investigative purposes without first being prompted by a prosecutor or supervisor, blaming the technical shortcomings of the server and/or ViewSafe (discussed above) and prosecutorial practices.

Prosecutors asked PPD to provide them with all BWC footage of each officer present at crime scenes. Such serious cases typically drew a relatively large patrol response and therefore investigators mentioned spending anywhere from two to eight hours per case tracking down, sifting through, watching, and compiling footage for the prosecutor.

*Tuesday night we had a murder. It's Friday now. There was lots of [officers] that were on scene that haven't submitted their video yet. I must at least wait a week before it gets in. And once it gets in, I got to basically go into the run cards, make a folder in my case file for every single person that's listed on the run card. Then I must go through each person and search them for that date and time to see if they actually had any footage. If they were just driving and they disregarded the call, they don't have anything, but I've gotta see if there's anything there. And then if there's anything there, there're multiple officers with multiple videos. Let's say they approach and talk to somebody involved at the scene, and then they go away, turn their camera off because they move away from them to maybe talk another officer that's not involved, and then they go talk to the suspect again and they turn their camera back on. Each time they turn their camera on and off, it creates a separate video file in the system. So, I have to go through each and every video in that time frame. They could each have 3, 4, 5 videos related to the case, so I gotta go through that process, and then file all those under that person, and then do that for every single person. [User 4]*



All 25 interviewed users who were also investigators bemoaned this issue to a large extent.

Moreover, 37 users expressed an ideological objection to the prosecutors' alleged overreliance on BWC footage. After the prosecutors put forth a memo saying they would no longer press charges in the absence of BWC footage, users felt that prosecutors had turned the footage into a "crutch" rather than focusing on its benefits as an evidentiary tool. While users seemed to understand that prosecutors were preemptively trying to avoid strife with defense attorneys, these prosecutorial practices undermined **users'** good faith and credibility. Similarly, 41% of survey respondents ( $m=2.77$ ;  $SD=1.385$ ) claimed that BWCs had negatively impacted their credibility in court, much like what Pickering (2020) found.

Seventy-two users expressed concerns about BWCs affecting their ability to use discretion in their work, which was especially true after administrators implemented a "shall arrest" misdemeanor warrant policy.

*One of the reasons why I chose this job was the independence and the freedom to make my own decisions. That type of stuff really grates on me, because I don't like being micromanaged. I don't like being second-guessed. If [administrators] put things in place that just completely disregard all of that, it's easier on [administrators], but it's harder on us. When you have a victim of a battery who lost consciousness and has a broken jaw, you have to wait with him at the hospital because he has a misdemeanor writ and you have to take him to jail after he gets out of the hospital. I just think we should just give a pass on that. [User 3]*

This sentiment was also present among survey respondents of whom 76% ( $m=1.89$ ;  $SD=1.019$ ) indicated that BWCs had diminished their ability to exercise discretion. Due to wearing a BWC, 57% ( $m=2.27$ ;  $SD=1.122$ ) felt uncomfortable cutting someone a break when confronted with a misdemeanor; 52% ( $m=2.39$ ;  $SD=1.238$ ) when handling petty offenses.

Additionally, 64% ( $m=2.27$ ;  $SD=1.122$ ) reported that BWCs would make officers more cautious when dealing with civilians, and 75% ( $m=1.90$ ;  $SD=1.127$ ) reported that officers would be less likely to use force (even when justified) due to BWCs, a finding consistent with much of the BWC literature (Lum et al., 2019).

Semi-structured interviews illustrated that some users (47/91) feared that footage would be taken out of context in the aftermath of a contested incident. For these respondents, people who were not present during a situation or who do not understand the realities of police work (e.g., public and media) could misinterpret BWC footage and “make a mountain out of a molehill” (a term commonly iterated by users). As a result, users felt that BWCs caused them to de-police (see Wallace et al., 2018). Additionally, some users did not anticipate the extent to which administrators would release footage to the public. Users understood the importance of releasing footage to the media and the public. However, they felt that, often, administrators released footage to the media without making users aware that it would be released. They reported that unexpectedly seeing their BWC video on social media feeds, being confronted by members of the public, or being contacted by a friend about an event that occurred in Pennybridge would make them uncomfortable. Sometimes they were unaware that these events even occurred and felt completely blindsided.

Administrators were sanguine about the consequences of BWCs, seeing them as a tool to protect the department and to control the narrative of high-profile events. Conversely, users simultaneously appreciated the evidence-gathering capacity of the cameras but expressed concerns about how footage was made available to the public and about how others would interpret the footage and judge the officers’ conduct. Users were concerned that accountability may not be fair or even-handed, that BWCs limited their discretion to exercise their own

professional judgment, and that BWC use would cause officers to disengage or “de-police.” Mandated adoption of BWCs challenged users’ perception of themselves as “skilled practitioners” (Herbert 2006)—both due to increased administrative oversight as well as enhanced visibility to outsiders who officers perceived as not understanding the nuances and daily requirements of the profession. The possibility that outsiders would (mis)interpret and (mis)represent officers’ recorded conduct, and make the officers’ conduct increasingly visible, exemplified Goodwin’s (1994: 615–16) concept of “contested vision,” as separating the interpretation from the experience and “professional vision” of the police. These other readings of the evidence contest the “socially organized ways” that police see and understand the recorded events. Users seemingly lost much control over how they would perform their daily tasks because of BWCs and developed largely negative frames over time (for similar findings related to police officer perceptions of bystander video, see Newell, 2019). In the end, users reported begrudgingly using the technology to comply with departmental policy.

### **Nature of Body-Worn Cameras**

When individuals are focused on the technical aspects of a technology, like features, functionality, and complexity, they are framing the technology within the *nature of technology* domain (Orlikowski & Gash, 1994). Congruence within this domain does not necessarily imply that relevant social groups have identical perspectives concerning the technical aspects of a technology (Davidson, 2006). Rather, research has found that congruence may exist if different relevant social groups positively perceive the features and functionality of a technology according to their own organizational needs (Koen & Willis, 2019).

#### *Administrators*

At the time of implementation, administrators were predominantly concerned with the cost and quality of BWCs. This is unsurprising, as police leaders and managers are routinely

more concerned with larger policy-based goals (Reuss-Ianni, 1983; Paoline, 2003). Given the relative size of the agency, the potential upfront costs of the devices and the uncertain nature of anticipated future storage costs were primary sources of concern for administrators. Knowing that they would spend a lot of money, they were anxious to find an affordable solution prior to implementation.

The department, therefore, tested myriad products and were impressed by those that also offered cloud-storage solutions (e.g., Axon). However, when PPD tested ProCop, they were the only company that offered to make PPD a “beta-agency” for about 4 years. This meant that PPD would receive some equipment, maintenance, and replacement units at no additional cost. Despite being underwhelmed by the technical capabilities of the units and the on-premises server application for data storage, administrators (14/15) admitted that this was an offer they “could not refuse.”

*Being the promotional market, anytime one of our camera heads goes out or a dock needs to be fixed, we just send them an email and it's fixed for free. At the beginning, it seemed like a good product. It was really hard to pass on.  
[Administrator 3]*

Over time, however, PPD administrators (13/15) became increasingly frustrated with the features and functionality of ProCop BWCs. They noted issues like distorted footage and audio (14/15) and disconnecting wires (12/15) through viewing footage for various reasons or hearing complaints from patrol supervisors. Similarly, as administrators viewed footage, they saw the on-premises server malfunction or become sluggish over time with the gradual accumulation of video data.

*When you're trying to search through 1,500 hours' worth of video on an almost dial-up system, it crashes. You could ask for a file and come back a few minutes later, it may show up or it may not show up. I don't want you to think it'd be every*

*time, but it's not as guaranteed as turning on your phone. You can do that a hundred times a day and it will always work. You make that same request out of the system for a video file a hundred times a day, 60 of them might work after waiting 5 minutes. The other 40, the system crashes. [Administrator 2]*

While administrators were dissuaded by the high annual fees for third-party storage options (e.g., evidence.com) before implementation, they felt like they did not adequately foresee exactly how financially taxing it would be to opt for an on-premises storage solution. This is no surprise as the precarious nature and high backend costs of this technology have been thoroughly discussed in the BWC literature (Lum et al., 2019; Willis, 2019; White & Malm, 2020).

While state law required all video evidence to be kept for 190 days, PPD kept their footage for three years unless it was tied to a specific case. Video relevant to a particular case would be kept until after a case was resolved. As officers were required by PPD policy to record every citizen interaction and begin recording at the time they were dispatched to a run, the video data became unbearably burdensome on the PPD server. While all the administrators explained that storage was a major financial burden to the department, 11 of them felt that it was more burdensome than they had initially anticipated. Eight of these 11 officers regretted that the department had not chosen a cloud storage option, as they felt it would have allowed them to accurately calculate how much more storage would cost given the pricing schemes these companies offered. As the beta-testing period was coming to an end, none of the administrators saw a way forward with the ProCop units.

### *Users*

At the time of implementation, users were worried about the ease-of-use, durability, and functionality of the ProCop system, which is consistent with much of the perceptual research (Gaub et al., 2016; 2019; Koen & Willis, 2019). Some specific examples of their anxiety related

to how long it would take them to don their BWCs, the response times of the technology, and the user interface of ViewSafe. Users feared that if BWCs were too technically complex, it would take time away from police duties and/or cause safety hazards.

On the survey, officers were asked to rate how easy or difficult BWCs were to use on a 10-point scale, from 1 (“very difficult”) to 10 (“very easy”). On average, they rated the ease of use at 7.18 (SD=1.833). This was consistent with interview data that showed officers were sanguine about the ease-of-use of the system. Moreover, 77% (m=2.00; SD=0.917) of survey respondents claimed devices were easy to equip at the beginning of their shifts.

Despite perceiving the units as generally straightforward, users grew frustrated with the features and functionality of the entire ProCop system over time. One of the most important technical concerns became the ever-weakening battery life of the devices. Only 41% of patrol officers felt that their batteries would last an entire shift, while 52% of them disagreed<sup>4</sup> (m=3.22; SD=1.404). Interview data echoed these concerns as, 69/91 users mentioned being disenchanted by the battery life, lamenting worsening battery life; claiming after three to six months of regular use, the batteries would degenerate to the point where they would not last an entire shift. To cope with battery problems, some officers began charging their spare batteries in their vehicles, carrying two batteries, asking the IT department for larger battery packs or, in some instances, would switch out their old battery for another unsuspecting officer’s newer battery at the charging dock.

Like administrators, users were also concerned with the BWCs losing focus (81/91). However, this was just one of many forms of irritation they felt with the system. Additional examples were snapping wires (49/91), on/off switches getting stuck (32/91), and distorted video and audio (47/91). Twenty-six users were particularly annoyed with how weak the alligator clip

was that attached the camera to their uniforms. They felt that it would easily cause the camera to detach during physical activity.

*It doesn't get in the way, but it doesn't stay put, which I'm sure you've probably been told. The alligator clip sucks. Especially if you get into some type of fight or something, it's like the first thing that happens, it falls out. Then when you're watching the video, you just see it swinging at the ground. [User 5]*

During ride-along observations, researchers saw 23/149 instances where the alligator clip failed and BWCs fell from where they were secured on the officers, 13 of these involving the use of force and 10 activities such as running, jogging, or walking fast.

Like administrators, users were also piqued by the poor performance of ViewSafe and the on-premises server. While many of them found the processes by which to upload footage and the overall user interface of ViewSafe to be intuitive, there were some interrelated issues with the backend that frustrated users. For instance, 43/91 users mentioned an issue with video playback, which had become a recent problem. When users would watch a video for any reason, they would not be permitted by ViewSafe to skip to different parts of the video. When an officer was attempting to skip through the video by moving the timeline cursor in the media player, the video would automatically restart. Patrol users cited this as the reason they seldom reviewed footage when writing reports. Users who were investigators and supervisors who were in some cases compelled by policy to work with footage, were particularly annoyed by this limitation.

*I don't know what the hell is going on. But it is pissing me off, and it is pissing off the rest of us [supervisors]. We will get wind of a use-of-force, and we have to watch the body cam footage. Not just of the officer, but other officers too. A lot of our officers are turning on their cameras as they are driving to a scene. 'Cause that's the rule, you have to turn them on when you are dispatched. So now, I am watching this guy's fucking steering-wheel for 5, 10, 20 minutes. I try to skip through, and the whole video starts back at the beginning. [User 6]*

After two ride-alongs, some users invited observers to see this issue for themselves, which had become a major factor in shaping their overall attitudes towards BWCs.

Users also grew frustrated with the responsiveness of the server when they had to navigate ViewSafe. Whether they were uploading footage, seeking out a particular video to view, or playing a video, all 91 users mentioned being irritated by the general slowness of the server.

*This server or whatever you want to call it, [ViewSafe]. It's slow. It's like when I had dial-up internet 20 years ago and you are trying to download a song, it takes forever. I am so frustrated with it. I cannot stand it and I am sure, I am not the first. You're probably tired of hearing about this from the others. [User 7]*

Many cited that they wanted to spend as little time as needed on ViewSafe reviewing footage as the server would malfunction, freeze, or crash. At the same time, users felt that if the backend system were to work as intended, they would likely spend more time innovating with the footage.

Administrators were concerned about the cost and maintenance of BWCs. These concerns ultimately drove their decision to implement the ProCop BWCs, which, at face value, offered the cheapest option. This differed from user concerns, which centered around how the features and functionality of BWCs would affect their day-to-day work. Users feared that BWCs could complicate their working lives by taking them “off the street” and away from “real” police work or by dividing their attention in potentially unsafe situations. Initial fears about the complexity of the BWCs were assuaged shortly after implementation, however, these feelings gave way to vexation as their frames became overwhelmed by the technical shortcomings and malfunctions related to the ProCop BWC system in the following years. Consequently, this irritation compounded the frustrations users felt within the other domains and, therefore, users were reluctant to interact with the technology outside of what policy mandated.



Administrators' fears about the potential financial burden of BWCs were gradually realized over time as the server malfunctions and storage became a logistic and financial disaster. To administrators, the technical shortcomings of the ProCop system made it difficult to comprehensively accomplish the outcomes that dominated the content of their other frame domains. In addition to the prospect of the department bearing the entire cost of the technology, administrators began to see extraordinarily little value in their current BWC program, which finally pushed them to discontinue the current program in search for a new one.

### **Discussion**

We provide a unique, qualitative examination of police technological frames and how they changed over time up to the point of project abandonment. This approach allowed officers to express their own opinions of BWCs, without exclusively being confined by response categories<sup>5</sup>. Our reliance on a large number of qualitative interviews with officers across an agency, rather than closed-ended quantitative survey responses only aimed at patrol, allowed us to develop a rich understanding of how relevant social groups perceived BWCs, and how they reported these perceptions changing over time. Our findings also support the idea that attitudes and perceptions of new technologies are bound to contextual factors (Orlikowski & Gash, 1994). Our data indicate there are similarities between officers' perceptions of BWCs at PPD and at other police agencies, but the specific history behind PPD's implementation strategy (and other contextual factors unique to PPD) clearly animate many of the findings we report here.

Administrators implemented BWCs in the hope they would serve as a transparency tool to protect the department, hold officers accountable, and be a gesture of good faith to the community. These views were reflected in the policy and how administrators perceived their use over time. However, as time passed, administrators felt that the technical shortcomings and logistical burden of the ProCop system made it difficult to implement BWCs in the way they had

envisioned. The overall cost of the technology overshadowed the perceived benefits and, thus, administrators saw little value in the system they chose to implement.

Users perceived BWCs to be a “gotcha mechanism,” enabling administrators to conduct “witch hunts” and hem officers up for minor policy infractions. Over time, some of the users’ anxiety began to give way as they saw potential benefits to using the technology, however, the way they perceived the administrators’ response to the needle event and run card policy seemed to abruptly reinforce first impressions. Additionally, impressions that BWCs would undermine their discretion, credibility, and regard for safety began to dominate user frames. Users felt sold out by administrators who seemed to put the concerns of the community before those of users. To make matters worse, the technology itself, while easy to use, was technically inadequate, compounding their disillusionment. In the end, users did not want to use BWCs any longer, but continued using them to avoid disciplinary action.

The decision to discontinue the existing BWC program at PPD was ultimately in the hands of the administrators. However, the technological frames perspective revealed the readiness of each group to move on in different ways at the time of data collection. *Our data shows that while administrators were prepared to abandon the current BWC program, users on the other hand had abandoned the idea of BWCs altogether.* Using technological frames allowed us to elucidate how the thought processes of those in charge of making implementation decisions (administrators) were shaped over time in addition to the views of those who were mandated to use them (users). This is important because it provides insight into what police departments might expect when implementing BWCs for the first time, but also what agencies might have to face within the context of generating buy-in when replacing existing or failed programs.

### **Implications for Policy and Future Research**

Our study adds two important implications within the context of BWCs and project abandonment for practitioners and scholars to consider. First, in contrast to technological frames theory, as proposed by Orlikowski & Gash (1994), which suggests that first impressions of technologies congeal early in the framing process, our findings (much like Lin & Cornford, 2002 and Koen & Willis, 2019) imply that perceptions of BWCs do not remain consistent over time and with increased interaction. As evidenced by users' framing of the technology strategy, change occurred but it also ebbed and flowed between positive and negative views. A "flashpoint" (i.e., the needle event) significantly changed their experiences with BWCs and played a major role in abruptly changing the trajectory of their frames. This supports the notion that police perceptions of BWCs are not static but can be changed.

Police leadership, therefore, can be optimistic that they could potentially change negative views that had been reinforced over time (see Koen & Willis, 2019). Practitioners should, therefore, pay attention to and take into consideration the perceptions of groups across the organization when making implementation and policy decisions. At the same time, police administrators must be careful in how they use and implement policies regarding (and beyond) BWCs as they could result in negative flashpoints that swiftly undermine years of positive framing.

Policymakers must work closely with scholars to continue to examine how police perceptions of BWCs evolve over time to identify and confirm, empirically, which factors are instrumental in shaping perceptions for better or worse. For example, police agencies may benefit from asking scholars to conduct (or provide input on) surveys, interviews, or focus groups prior to, during, or after the implementation of new technologies or policies related to those technologies. In fact, PPD asked one of the authors of this paper to conduct a focus group

during the implementation of their new BWC fleet, while the department sent out an in-house survey to all users. PPD shared the survey data with the author, who in conjunction with the focus group data provided a report to the PPD administrators with myriad policy and implementation recommendations. Such endeavors would provide useful insights for policymakers seeking positive implementation outcomes (if they should heed those recommendations). However, we cannot naïvely assume that practitioners would always heed the advice of scholars.

A second important contribution that has not received much scholarly attention is BWC features and functionality. While both groups were ready to move on from the ProCop BWCs in their own ways, administrators were ultimately the group with the power to make implementation decisions. What seemed to be the primary drive behind deciding to replace their BWC provider was how administrators framed the nature of technology over time. PPD administration became increasingly aware of and frustrated at the technical shortcomings of ProCop and, as the beta-period was ending, administrators saw little value in the product anymore. With the exception of a few passing remarks about the diverse array of BWC products on the market and a predominant focus on backend storage (White 2014; Koen & Willis, 2017; Lum et al., 2019; White & Malm, 2020) scholarly attention has yet to focus much on the differences between BWC manufacturers and features and how those play a role in implementation processes and outcomes.

What might seem like the cheapest option, may become significant financial and interpersonal burden to police agencies. Therefore, research into the overall value of different types of BWCs and backend systems could help inform implementation decisions and save jurisdictions millions of dollars over time. Similarly, police leaders and external stakeholders

(e.g., mayors, city council members) should be careful to focus more on the overall value of BWCs as opposed to the cost. It might turn out being less costly to systematically consult those officers who would use the technology on a more consistent basis to determine and address the product evaluation and piloting stage of implementation. Practitioners and policymakers may also consider phased implementation of BWCs where a certain number of officers are equipped with BWCs at a time (see Koen et al., 2019). This might allow police managers to estimate more accurately what future financial burdens may be, how to shape policy, and how to work with external stakeholders. Scholars may also consider examining myriad implementation approaches across multiple organizational contexts with the aim of providing more pointed recommendations to practitioners.

### **Conclusion**

While our study makes important contributions to the growing body of literature, it is not without limitations. For instance, we draw from data collected within a single mid-sized police agency in the United States. Our reliance on qualitative data allows us to gain rich insights within the agency we studied, but it limits our ability to generalize our findings beyond it. As with prior work (Koen & Willis, 2019), our analysis of technological frames over time relied heavily on our respondents' memories, which could have been colored over time, we found no major discrepancies in the recollection of events across the 106 interviews that we conducted. Our findings would have been more valid if we had conducted data collection pre/post implementation and when the program was abandoned.

Moreover, respondents' answers to interview questions could have been impacted by social desirability bias, especially for those officers who might have held views that were unpopular among users and administrators. However, researchers were clear to ensure confidentiality at the beginning of interviews. Moreover, the survey was anonymous which

would have potentially allowed those officers to express those views more comfortably, yet we saw no major discrepancies between our survey and interview data.

Despite these limitations, this case study provides additional evidence that technological frames theory can provide “a useful socio-cognitive perspective for understanding the complexities of how police officers make sense of body-worn cameras” (Koen & Willis, 2019: 14). Broadening this approach to studying law enforcement perceptions of BWCs in other contexts would continue to push these insights further. The quickly growing body of quantitative, experimental studies of BWC implementation and outcomes are vitally important and have provided numerous important insights. However, the rich understanding and contextual information that emerges from rigorous qualitative inquiry should also be a heightened focus of future BWC research as they stand to provide a well-rounded understanding of how BWCs are affecting police work and peoples’ lives within the communities where these cameras are deployed.

### **Endnotes**

<sup>1</sup>. This included footage that was not associated with an open case, investigation, or high-profile event.

<sup>2</sup>. The body-worn camera policy is discussed further in the findings section.

<sup>3</sup>. 176 citizen encounters were observed, but 27 were excluded from the analysis either because researcher presence impacted the encounter, or the researcher was not physically close enough to gather data due to safety precautions.

<sup>4</sup>. The remaining 7% took a neutral stance.

<sup>5</sup>. Most perceptual studies rely on predominantly close-ended survey responses and have primarily focused on patrol perceptions.

## References

- Adams, I., & Mastracci, S. (2018). Police body-worn cameras: Effects on officers' burnout and perceived organizational support. *Police Quarterly* 0(0), 1-26. DOI: 10.1177/1098611118783987.
- Ariel, B., Farrar, W.A., & Sutherland, A. (2015). The effect of police body-worn cameras on use of force and citizens' complaints against the police: A randomized controlled trial. *Journal of Quantitative Criminology*, 31, 509-535.
- Ariel, B., Sutherland, A., Henstock, D., Young, J., Drover, P., Sykes, J., Magicks, S., & Henderson, R. (2016). A global multisite randomized controlled trial on the effect of police body-worn cameras on citizens' complaints against the police: A case of contagious accountability? *Criminal Justice and Behavior* 44(2): 293-316
- Barr, P. (1998). Adapting to unfamiliar environmental events: A look at the evolution of interpretation and its role in strategic change. *Organization Science*, 9, 644-669.
- Berger, P., & Luckmann, T. (1967). *The Social Construction of Reality*. New York, NY: Anchor.
- Bijker, W., Hughes, T., Pinch, T. (1987). *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology*. MIT Press. Cambridge, MA
- Bijker, W. (1995). *Of Bicycles, Bakelites, and Bulbs: Towards a Theory of Sociotechnical Change*. MIT Press. Cambridge, MA

- Braga, A., et al., (2017). The benefits of body-worn cameras: New findings from a randomized controlled trial at the Las Vegas Metropolitan Police Department. Washington, DC: Department of Justice.
- Callahan, R. (2016). Some police departments shelve body cameras, cite data costs. *Associated Press (AP)*. Retrieved from <https://apnews.com/article/f19d7270535f4202b92de1872278330f>**
- Chan, J. (2001). The technological game: How information technology is transforming police practice. *Criminal Justice*, 1(2), 139-159
- Chan, J. (2007). Making sense of police reforms. *Theoretical Criminology*, 11(3), 323-345
- Clare, J., Henstock, D., McComb, C., Newland, R., Barnes, G.C., Lee, M. and Taylor, E. (2019). Police, public, and arrestee perceptions of body-worn video: a single jurisdictional multiple-perspective analysis. *Criminal Justice Review*, 44(3): 304–321.
- Coudert, F., Butin, D., Le Matayer, D. (2015). Body-worn cameras for police accountability: Opportunities and risks. *Computer Law & Security Review*, 31, 749-762
- Davidson, E. (2002). Technology frames and framing: A socio-cognitive investigation of requirements determination. *MIS Quarterly*, 26(4), 329-358.
- Davidson, E. (2006). A technological frames perspective on information technology and organizational change. *The Journal of Applied Behavioral Science*, 42(1), 23-39.
- Davidson, E., Pai, D. (2004). Making sense of technological frames: Promise, progress, and potential. In B. Kaplan, D. Treux, D. Wastell, T. Wood-Harpe, & J. DeGross (Eds.), *Relevant Theory and Informed Practice: Looking Forward from a 20 Year Perspective on IS Research* (pp. 473-491). Boston, MA: Kluwer.
- Ericson, R.V. (1995). The news media and account ability in criminal justice. In P. Stenning (Ed.), *Accountability for Criminal Justice: Selected Essays* (135–161). Toronto, ON, Canada: University of Toronto Press.
- Ewusi-Mensah, K., & Przasnyski, Z. (1991). On information systems project abandonment: An exploratory study of organisational practices. *MIS Quarterly*, March, 67–85.**
- Goetschel, M., & Paha, J.M. (2017). Police perceptions of body-worn cameras. *American Journal of Criminal Justice* 42, 698-726.
- Gaub, J., Choate, D., Todak, N., Katz., White, M. (2016). Officer perceptions of body-worn cameras before and after deployment: A study of three departments. *Police Quarterly*, 19(3), 275-302.
- Gaub, J., Choate, D., Todak, N., White, M. (2017a). *Beyond Patrol: Exploring the Perceptions of Police Body-Worn Cameras among Officers in Specialized Units*. Report for the Laura and John Arnold Foundation. Tempe, AZ: Center for Violence Prevention and Community Safety, Arizona State University
- Gaub, J. White, M.D., Padilla, K.E., & Katz, C.M. (2017b). Implementing a police body-worn camera program in a small agency. Arizona State University Center for Violence Prevention and Community Safety, Tempe, AZ.



- Gaub, J. E., Todak, N., & White, M.D. (2019). One Size Doesn't Fit All: The Deployment of Police Body-Worn Cameras to Specialty Units. *International Criminal Justice Review*, 1-20.
- Goodall, M. (2007). Guidance for the Police Use of Body-Worn Video Devices. Police and Crime Standards Directorate, Home Office, London.  
<http://library.college.police.uk/docs/homeoffice/guidance-body-worn-devices.pdf>.
- Goodwin, C. (1994). Professional Vision. *American Anthropologist*, 96(3), 606–633.
- Grossmith, L., Owens, C., Finn, W., Mann, D., Davies, T., & Baika, L. (2015). Police, camera, evidence: London's cluster randomised controlled trial of Body Worn Video. *College of Policing and the Mayor's Office for Policing and Crime (MOPAC)*. London, United Kingdom
- Hayes, J., Ericson, L. (2012). *A Primer on Body-Worn Cameras for Law Enforcement*. U.S. Department of Justice, Office of Justice Programs, National Institute of Justice. Washington, D.C
- Headley, A. M., Guerette, R.T., and Shariati, A. (2017). A field experiment of the impact of body-worn cameras (BWCs) on police officer behavior and perceptions. *Journal of Criminal Justice*, 53: 102-109.
- Hough, M. (1980). Managing with less technology: The impact of information technology on police management. *British Journal of Criminology*, 20(4), 344-357
- Hyland, S. S. (2018). *Body-worn cameras in law enforcement agencies, 2016*. Washington, DC: U.S. Department of Justice, Office of Justice Programs, Bureau of Justice Statistics.
- Jennings, W. G., Fridell, L.A., & Lynch, M.D. (2014). Cops and cameras: Officer perceptions of the use of body-worn cameras in law enforcement. *Journal of Criminal Justice*, 42(6), 549-556.
- Jennings, W.G., Lynch, M.D. and Fridell, L.A. (2015). Evaluating the impact of police officer body-worn cameras (BWCs) on response-to-resistance and serious external complaints: evidence from the Orlando police department (OPD) experience utilizing a randomized controlled experiment. *Journal of Criminal Justice*, 43(6): 480–486.
- Katz, C., Kurtenbach, M., Choate, D.W., & White, M.D. (2015). *Phoenix, Arizona, Smart Policing Initiative: Evaluating the Impact of Police Officer Body-Worn Cameras*. U.S. Department of Justice, Bureau of Justice Assistance. Washington, DC
- Kindly, K. (2019). Some U.S. police departments dump body-camera programs amid high costs. *Washington Post*. Retrieved from [https://www.washingtonpost.com/national/some-us-police-departments-dump-body-camera-programs-amid-high-costs/2019/01/21/991f0e66-03ad-11e9-b6a9-0aa5c2fcc9e4\\_story.html](https://www.washingtonpost.com/national/some-us-police-departments-dump-body-camera-programs-amid-high-costs/2019/01/21/991f0e66-03ad-11e9-b6a9-0aa5c2fcc9e4_story.html)**
- Koen, M.C. (2016). *On-set with body worn cameras in a police organization: Structures, practices, and technological frames*. (Doctoral dissertation). George Mason University.
- Koen, M. C., Mathna, Brooke, E. (2019). Body-worn cameras and internal accountability at a police agency. *American Journal of Qualitative Research*, 3(2), 1-22

- Koen, M. C., Willis, James J. (2017). "Body-Worn Cameras: 'The New Normal?'" In L. Moriarty, ed., *Criminal Justice Technology in the 21<sup>st</sup> Century*. Charles Thomas Publisher, Ltd. Springfield, IL
- Koen, M. C., Willis, James, J. (2019). Making sense of body-worn cameras in a police organization: a technological frames analysis. *Police Practice and Research*, 31(4), 351-367.
- Koen, M. C., Willis, James J., and Mastrofski, S.D. (2019). The effects of body-worn cameras on police organization and practice: a theory-based analysis. *Policing and Society*, 29(8), 968-984.
- Koops, B-J. (2008). Criteria for Normative Technology: An Essay on the Acceptability of 'Code as Law' in Light of Democratic and Constitutional Values." In R. Brownsword & K. Yeung (Eds.), *Regulating Technologies: Legal Futures, Regulatory Frames and Technological Fixes* (157–174). Oxford: Hart Publishing.
- Koper, C.S., Lum, C., & Willis, J.J. (2014). Optimizing the Use of Technology in Policing: Results and Implications from a Multi-Site Study of the Social, Organizational, and Behavioural Aspects of Implementing Police Technologies. *Policing: A Journal of Policy and Practice*, 8, 212-21.
- Kyle, M.J., and White, D.R. (2017). The impact of law enforcement officer perceptions of organizational justice on their attitudes regarding body-worn cameras. *Journal of Crime and Justice*, 40(1): 68-83.
- Leenes, R. (2011). Framing Techno-Regulation: An Exploration of State and Non-State Regulation by Technology. *Legisprudence*, 5(2): 143–169.
- Lesca, N., Caron-Fasan, M.L. (2008). Strategic scanning project failure and abandonment factors: Lessons learned. *European Journal of Information Systems*, 17. 371-386.**
- Lin, A., & Cornford, T. (2002) "Framing Implementation Management," in W. J. Orlikowski, S. Ang, P. Weill, H. C. Krcmar, and J. I. DeGross (Eds.), *Proceedings of the 21<sup>st</sup> International Conference on Information Systems*, Brisbane, Australia
- Lin, A., & Silva, L. (2005). The social and political construction of technological frames. *European Journal of Information Systems*, 14, 49-59.
- Lockhart, P.R. (2019). Why some police departments are dropping their body camera programs. *Vox*. Retrieved from <https://www.vox.com/2019/1/24/18196097/police-body-cameras-storage-cost-washington-post>**
- Lucia, B. (2014). Massive public records requests cause police to hit pause on body cam programs. *CrossCut*. Retrieved from <https://crosscut.com/2014/11/body-cams-washington-seattle-privacy-disclosure>**
- Lum, C., Koper, C.S., Merola, L.M., Scherer, A., and Reioux, A. (2015). *Existing and Ongoing Body Worn Camera Research: Knowledge Gaps and Opportunities*. Report for the Laura and John Arnold Foundation. Fairfax, VA: Center for Evidence-Based Crime Policy, George Mason University.
- Lum, C., Stoltz, M., Koper, C.S., and Scherer, J.A. (2019). The Research on Body- Worn Cameras: What We Know, What We need to Know. *Criminology and Public Policy*.

- Manna, N. (2017). Police department stops using body cameras after legislation. *Lincoln Journal Star*. Retrieved from [https://journalstar.com/news/local/crime-and-courts/police-department-stops-using-body-cameras-after-legislation/article\\_05a4e7d3-2239-5a15-94c5-9b612fe71b2b.html](https://journalstar.com/news/local/crime-and-courts/police-department-stops-using-body-cameras-after-legislation/article_05a4e7d3-2239-5a15-94c5-9b612fe71b2b.html)
- McGovern, T., & Hicks, C. (2004). How political processes shaped the IT adoption by a small make-to-order company: A case study in the insulated wire and cable industry. *Information and Management*, 42, 243-257.
- McLean, K., Wolfe, S.E., Chrusciel, M.M., and Kaminski, R.J. (2015). *Body-worn cameras in South Carolina: Law enforcement executives' views concerning use, policies, and outcomes*. University of South Carolina. Retrieved from [http://www.sc.edu/study/colleges\\_schools/artsandsciences/criminology\\_and\\_criminal\\_justice/documents/2015\\_census\\_report.pdf](http://www.sc.edu/study/colleges_schools/artsandsciences/criminology_and_criminal_justice/documents/2015_census_report.pdf).
- Miller, L., Toliver, T., & and Police Executive Research Forum (PERF). (2014). *Implementing a body-worn camera program: recommendations and lessons learned*. Washington DC: Office of Community Oriented Policing Services.
- Miles, M., Huberman, A., Saldaña, J. (2014). *Qualitative Data Analysis: A Methods Sourcebook*. Sage. Washington, D.C
- Muhr, T. (1991). Atlas.ti: A prototype for the support of text interpretation. *Qualitative Sociology*, 14(4), 349-371. doi: 10.1007/BF00989645
- Newell, B.C. (2017). Collateral visibility: A socio-legal study of police body camera adoption, privacy, and public disclosure in Washington State. *Indiana Law Journal*, 92(4), 1329-1399.
- Newell, B.C., Gomez, R., & Guajardo, V.E. (2017). Sensors, cameras, and the new 'normal' in clandestine migration: How undocumented migrants experience surveillance at the U.S.-Mexico border. *Surveillance & Society*, 15(1), 21-41.
- Newell, B.C., & Greidanus, R. (2018). Officer discretion and the choice to record: Officer attitudes towards body-worn camera activation. *North Carolina Law Review*, 96, 1525-1578.
- Olesen, K., Narayan, A., Ramachandra, S. (2013). Technological frames: Influence of group frames (ingluence). *Problems and Perspectives in Management*, 11(1), 81-92.
- Orlikowski, W. (1996). Improvising organizational transformation over time: A situated change perspective. *Information systems research*, 7(1), 63-92.
- Orlikowski, W. (2000). Using technology and constituting structures: A practice lens for studying technology in organizations. *Organization Science*, 11, 404-428.
- Orlikowski, W., Gash, D. (1994). Technological frames: Making sense of information technology in organizations. *ACM Transactions on Information Systems* 12(2), 174-207
- Owens, C., Mann, D., & Mckenna, R. (2014). *The Essex BWV Trial: The Impact of BWV on Criminal Justice Outcomes of Domestic Abuse Incidents*. College of Policing. London, United Kingdom

- Paoline, E. (2003). Taking stock: Toward a richer understanding of police culture. *Journal of Criminal Justice*, 31, 199-214
- Patton, M. (1987). *How to Use Qualitative Methods in Evaluation*. Sage Publications. Thousand Oaks, CA.
- Pelfrey, W.V. Jr and Keener, S. (2018). Body-worn cameras and officer perceptions: a mixed-method pretest posttest of patrol officers and supervisors. *Journal of Crime and Justice*, 39(3): 491–506.
- Phillips, S. W., Kim, D-Y., & Gramaglia, J. (2020). The impact of general police officer outlooks on their attitudes toward body-worn cameras. *Policing: An International Journal*. Advance online publication. doi:10.1108/PIJPSM-10-2019-0163.
- Pickering, J. C. (2020). Officers' perceptions regarding the unexpected effects of body-worn cameras. *Policing: An International Journal*. Advance online publication. <https://doi.org/10.1108/PIJPSM-09-2019-0153>
- Ready, J., & Young, J. (2015). The impact of on-officer video cameras on police-citizen contacts: Findings from a controlled experiment in Mesa, AZ. *Journal of Experimental Criminology*, 11(3), 445-458.
- Reaves, B.A. (2015). *Local police departments, 2013: Personnel, policies, and practices*. Washington, DC: Bureau of Justice Statistics.
- Reuss-Ianni, E. (1983). *Two Cultures of Policing: Street Cops and Management Cops*. Transaction Publishers. New York, NY
- Rossi, P. Lipsey, M, Freeman, H. (2004). *Evaluation: A Systematic Approach*. Sage Publications. Thousand Oaks, CA
- Roy, A. (2014). On Officer Video Cameras: Examining the Effects of Police Department Policy and Assignment on Camera Use and Activation. (Unpublished Master's thesis). Arizona State University, Phoenix, AZ.
- Sandhu, A., & Haggerty, K. D. (2017). Policing on Camera. *Theoretical Criminology*, 21(1), 78–95.
- Saulnier, A., St Louis, E., & McCarty, W. (2019). Procedural justice concerns and support for BWCs: Turning the lens to officer perceptions. *Policing: An International Journal*, 42(4), 671-687.
- Smykla, J. Crow, M. Crichlow, V., & Snyder, J. (2015). Police body-worn cameras: Perceptions of law enforcement leadership. *American Journal of Criminal Justice*, 41, 1-20.
- Sobreperez, P. (2008). Technological frame incongruence, diffusion, and noncompliance. In Leon, G. Bernardos, A. Casar, J. Kautz, K. DeGross, J. (2008). *IFIP International Federation for Information Processing, Volume 287, Open IT-Based Innovation: Moving Towards Cooperative IT Transfer and Knowledge Diffusion*. Springer. Boston, MA.
- Sparrow, M. (1991). Information systems: A help or hindrance in the evolution of policing? *The Police Chief*. 58(4), 26-44.
- Stanley, J. (2015). *Police body-mounted cameras: With right policies in place, a win for all*. New York, NY: American Civil Liberties Union,

- Strom, K. (2017). Research on the Impact of Technology on Policing Strategy in the 21st Century, Final Report. Washington DC: U.S. Department of Justice.
- Tankebe, Justice, and Ariel, B. (2016). *Cynicism towards change: The case of body-worn cameras among police officers*. (Research Paper No. 16-42). The Hebrew University of Jerusalem.
- Toronto Police Service. (2016). *Body-worn cameras: A report on the findings of the pilot project to test the value and feasibility of body-worn cameras for police officers in Toronto*. Toronto, ON, Canada: Author.
- Tyre, M., Orlikowski, W. (1994). Windows of opportunity: Temporal patterns of technological adaptation in organizations. *Organizational Sciences*, 5(1), 98-118.
- Wallace, D., White, M.D., Gaub, J. and Todak, N. (2018). Body-worn cameras as a potential source of depolicing: Testing for camera-induced passivity. *Criminology* doi.org/10.1111/1745-9125.12179
- White, M.D., Coldren, J. (2017). Body-worn police cameras: Separating fact from fiction. *PM Magazine*: [http://icma.org/en/press/pm\\_magazine/article/107941](http://icma.org/en/press/pm_magazine/article/107941). Accessed online March 14, 2017.
- White, M. D., Gaub, J. E., & Padilla, K. E. (2018a). Impact of BWCs on citizen complaints: Directory of outcomes. Retrieved from <http://www.bwcta.com/resources/bwc-resources/impact-bwcs-citizen-complaints-directory-outcomes>
- White, M. D., Malm, A. *Cops, Cameras, and Crisis: The Potential and Perils of Police Body-Worn Cameras*. NYU Press: New York, NY**
- White, M. D., Todak, N., & Gaub, J. E. (2017). Assessing citizen perceptions of body-worn cameras after encounters with police. *Policing: An International Journal*, 40, 1–27.
- White, M. D., Todak, N., & Gaub, J. E. (2018b). Examining body-worn camera integration and acceptance among police officers, citizens, and external stakeholders. *Criminology & Public Policy*.
- White, M. (2014). *Police Officer Body-Worn Cameras: Assessing the Evidence*. Washington, DC. Office of Community Oriented Police Services
- Willis, J.J., & Mastrofski, S.D. (2017). Controlling police through a balance of forces: The case of body cameras. *Cahiers de la sécurité et de la justice* 40.
- Yokum, D., Ravishankar, A., & Coppock, A. (2017). Evaluating the effects of police body-worn cameras: A randomized controlled trial. Washington, DC: The Lab @ DC.