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The impact of on-officer video cameras on police–citizen contacts: findings from a controlled experiment in Mesa, AZ

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Abstract
Objectives On-officer video camera (OVC) technology in policing is developing at a rapid pace. Large agencies are beginning to adopt the technology on a limited basis, and a number of cities across the United States have required their police departments to adopt the technology for all first responders. However, researchers have just begun to examine the effects of OVC technology on citizen complaints, officers' attitudes, and police–citizen contacts.
Methods This study examines officer behavior and perceptions of camera technology among 100 line officers in the Mesa Police Department during police–citizen encounters over a 10-month period. Experimental data from 3698 field contact reports were analyzed to determine whether being assigned to wear an OVC influences officer behavior and perceptions of OVC technology.
Results Bivariate and multilevel logistic regression analyses indicate that officers assigned to wear a camera were less likely to perform stop-and-frisks and make arrests, but were more likely to give citations and initiate encounters. Officers were also more likely to report OVCs as being helpful if they wore a camera and in situations where they issued a warning or citation, performed a stop-and-frisk, and made an arrest.
Conclusions Our results provide important insights into the consequences of OVCs on police behavior and suggest that officers are more proactive with this technology without increasing their use of invasive strategies that may threaten the legitimacy of the organization.

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Introduction

Organizations adopt innovations—new ideas, technology, or practices—because they meet existing needs. As members of an organization recognize problems that challenge its mission, actions are taken to adopt and implement innovations that produce resolution of the problem (Rogers 1995). Criminal justice organizations are no exception, as they face barriers to goals and seek to resolve them by following the innovation process (Ready and Young 2014). Recently, police organizations have started to employ on-officer video cameras (OVC) to accomplish organizational goals. Police organizations differ fundamentally from many other organizations because they monopolize the legitimate use of force. This unique aspect of policing promotes an atmosphere where the police are subject to controversy and, in some cases, civil action. The rapid diffusion of video technology through the general public has placed considerable pressure on police departments to advance their use of technology for crime control purposes.

The presence of a camera may promote increased police legitimacy in the eyes of the public due to the perception of greater accountability. The OVC may convey a sense of responsibility because the officer's actions can be monitored at each stage of the interaction. Research has shown that people become more self-aware when they are being watched, and as a result, they are more likely to alter their conduct (Farrar and Ariel 2013). This is appealing to police leadership in terms of the potential to improve police services and reduce civil liability, but may also have a civilizing effect on interactions with citizens.

Despite the rise of OVC technology, two key empirical questions regarding the effectiveness of these devices remain unanswered: whether officers assigned to wear cameras behave differently during police–citizen contacts than officers who do not use them, and whether departmental policy (i.e., activation policy and method of assignment) affects their use. The question of how policy affects the use of technology in the field is unexplored with regard to on-officer video cameras. This paper focuses on the underlying issues of how on-officer video cameras affect police–citizen interactions during field contacts and perceptions of the technology, controlling for effects of policy and officer assignment.

Literature review

Citizen and officer behavior in response to OVC technology

The presence of a video camera has been shown to alter the conduct of individuals who are aware that they are under scrutiny. People tend to act within accepted social boundaries, so they adapt their behavior to more acceptable standards when someone else is watching (Munger and Harris 1989). For both citizens and officers, awareness that the device is physically present is a key component in body-worn camera

effectiveness. The Police Standards Unit in Plymouth, England, reported that officers wearing OVC technology observed less aggressive behavior from citizens when they arrived at a crime scene (Home Office 2007).

Officers may be more self-aware and cautious in their actions when they activate a body-worn camera during a citizen contact. Using official data, the Rialto Police Department reported that the presence of a body-worn camera reduced use of force incidents by 50 % among officers wearing cameras (Farrar and Ariel 2013). However, it is unclear whether the decline was associated with changes in officer or citizen behavior due to the camera's presence. The Mesa Police Department's evaluation of on-officer video cameras revealed a 48 % reduction in citizen complaints against camera officers for misconduct during the study period, and a 75 % decline in use of force complaints (Mesa Police Department 2013). In both Mesa and Rialto, many complaints were resolved quickly due to the accessibility of video evidence (Lovett 2013). The British Home Office study reported similar occurrences (Police and Crime Standards Directorate 2007).

To date, pilot studies of on-officer video technology have focused on its impact on police misconduct using official data. However, there is a scarcity of research examining how OVCs impact everyday police–citizen interactions. With the growing use of OVC technology, it is incumbent on researchers to consider its impact on how police work is conducted in the field and how the technology is viewed by line officers in order to situate OVCs within the broader context of technological innovations in policing.

Officers' perceptions of OVC technology

When new police technology is adopted, officers must form expectations and assumptions that may influence behavior (Orlikowski and Gash 1994). Orlikowski and Gash refer to this process as developing a technological frame. A technological frame can be helpful or detrimental to the long-term sustainability of a program. Police officers' aversion to new technology, and change more generally, may be detrimental at the outset of the program. Officers may be resistant to change in their routines, especially new administrative tasks that disrupt their normal work activities. However, if officers are actively involved from the beginning in shaping new programs, the transition will be met with fewer obstacles. In turn, this may lead to the diffusion of ideas and attitudes that increase the legitimacy of body-worn cameras to other officers who may be skeptical (see Young and Ready 2014). If departments are cognizant of officers who are proponents of the technology, it may be possible to leverage those individuals as change agents who can translate management justifications for the cameras into practical benefits that are palatable to the rank-and-file.

Policy and OVC technology

Policy is a key factor that can affect the sustainability of programs introducing OVC technology. Patrol officers may feel that their autonomy is threatened by the potential for greater oversight that comes with the technological innovation. When this happens, some individuals may resist or attempt to undermine the operation.

Therefore, when police departments implement an OVC system or new technology of any sort, they must recognize that there is not only a technical adaption, but also a social adjustment that must also occur. The way new technology fits within the existing police culture is likely to influence how policies are written for its use, such as whether the agency adopts a mandatory or discretionary activation policy and whether officers are assigned to wear cameras on a mandatory or voluntary basis.

Current study

This study examines the impact of body-worn cameras on officer behavior during police–citizen contacts, controlling for policy, assignment, and officer characteristics. The paper also investigates how the activation policy (mandatory vs. discretionary) and assignment affect the use and endorsement of OVC technology. The above literature suggests that body-worn cameras may lead police to be more self-aware and conscious of their actions while interacting with citizens. Compared to control officers, we hypothesize that camera officers will perform significantly fewer warnings, stop-and-frisks, arrests (felony or misdemeanor), and officer-initiated citizen contacts (as opposed to dispatched calls). We also hypothesize that camera officers will perform significantly *more* citations for ordinance violations than control officers will. We anticipate that camera officers will be concerned about being reprimanded for *not* writing tickets when video shows that a citizen violated an ordinance or traffic law. Finally, we hypothesize that officers will be more likely to report OVCs as helpful if they were in the treatment group assigned to wear a camera, and during situations where they gave a warning or citation, performed a stop-and-frisk, and made an arrest (as compared to field contacts when they did not take coercive action).

Data and methods

Data

Data for the current study were obtained from a field experiment conducted by the Mesa Police Department (MPD) in Mesa, Arizona, from November 1, 2012 to October 1, 2013. The data collection and analysis were carried out through a partnership between the MPD and faculty at Arizona State University to evaluate the use of the on-officer video camera system. In November 2012, the Mesa Police Department initiated a 10-month evaluation of the Axon Flex on-officer video camera system.[1]

[1] TASER International's Axon cameras and Axon Flex cameras are the most widely adopted OVCs on the market. Other manufacturers that have on-officer video devices on the market include Vievu, Panasonic, and Wolf Enterprises. The Vievu device typically attaches to the officer's shirt using a metal clip, while the Axon Flex is worn on a wrap-around headpiece, sunglasses, collar mount, or in-dash car mount. A cord connects the camera to the battery, which can be placed on the officer's belt or vest. The technology differs in function, recording options, storage, and data retrieval. TASER International offers Evidence.com as a data management program to assist agencies in uploading, labeling, and linking videos to incident reports.

The evaluation focused on the cameras' ability to increase officer accountability, reduce citizen complaints, and enhance criminal prosecutions. The current study is one part of the larger evaluation and is based on field contact reports, one of several data sources used in the evaluation.[2] The study participants included 100 sworn patrol officers who were distributed throughout the city's five patrol districts.

This research is based on a quasi-experimental design where body-worn cameras were assigned to 50 treatment officers who were compared to a matched control group of 50 officers not assigned cameras. The study also examines how the mandatory or voluntary assignment of cameras affects officers' experiences and opinions of OVCs in the field, and controls for this condition statistically. Half of the treatment officers were selected from a list of volunteers and the other half of the treatment officers were mandatory-assigned (and did not volunteer to wear the cameras).[3] Volunteers were selected before non-volunteers and the selection process of non-volunteers was random. After the officers were assigned to the treatment group (n=50), they were matched to a comparison group of officers (n=50) based on age, race, and gender.[4] This resulted in a total of 100 police officers participating in the study.

The data are based on field contact reports completed by the officers on selected days every time the officers had contact with a citizen. Five days per month were randomly selected for officers to fill out the field contact reports, 1 day for each police precinct (50 days total). Follow-up days were selected in order to accommodate officers on squads that were not working on the original sample of 50 days selected for data collection.[5] The field contact report is a bubble form containing closed-ended questions about how the contact was initiated, the citizen's demeanor, suspect resistance, police actions, use of force, presence of victims and bystanders, officers' opinions about whether OVCs are helpful in that type of situation, and demographics of both officers and citizens.[6] Over the study period, officers completed a total of 3698 field contact reports.

[2] The team responsible for the larger study involved the Mesa Police Department's Red Mountain Division Commander, a lieutenant responsible for overseeing the evaluation, a sergeant who served as head of analysis for the operation, as well as two faculty members and a number of graduate students from Arizona State University's School of Criminology and Criminal Justice.

[3] An internal notice was posted for 1 month asking officers across the patrol districts to volunteer to participate in a study where they would wear on-officer video camera technology for approximately 1 year. The officers were also solicited by their commanding officers during briefings before their shifts.

[4] Appendix A shows the difference of means tests for officer characteristics by treatment and control group, indicating no significant differences between the groups.

[5] Although each officer filled out field contact reports on only one 10-h shift per month, data collection occurred on 160 days of the 10-month study period. The reason for this discrepancy is that many officers filled out field contact reports on shifts that occurred over two dates. In addition, many alternative days were selected in order to accommodate the officers on squads that were not working on the original sample of 50 days selected for data collection, as well as those on leave or vacation.

[6] We used the field contact report methodology rather than official data (i.e., arrest and use-of-force reports) for two reasons. First, the field contact reports enabled us to develop a baseline measure of the total number of police–citizen contacts occurring on selected days, including contacts resulting in no formal police action that would not be represented in official data. Second, the field contact methodology allowed us to gather information about informal police actions taken during officer-initiated contacts, officers' attitudes about OVCs during specific types of encounters, and details about citizens' behavior that may not be captured with official data.

Variables

Dependent variables

Officer behavior We measured the behavior of officers reported on field contact reports using five items. Officers were asked: "Did you give a verbal warning or command to a suspect?" (Verbal Warning); "Did you issue a citation to a person for violating an ordinance?" (Citation); "Did you conduct a stop-and-frisk in a public place?" (Stop-and-Frisk); and "Did you arrest a suspect on a felony or misdemeanor charge?" (Arrest). For these items, officers could respond yes (1) or no (0). A fifth item asked the officer "How was the incident initiated?" (Officer-Initiated Encounter) and measured whether the officer initiated the incident (1) or whether a call was dispatched (0).

Helpfulness of cameras We used one item to measure officers' perceptions of whether on-officer video cameras are helpful. Officers were asked: "In general, do you think the use of a body-worn camera in this type of encounter is…" with response categories "Very Helpful" and "Helpful" (both coded as 1) and "Not Helpful" and "Harmful" (both coded as 0). The "Very Helpful" and "Harmful" responses were coded as 1 and 0, respectively, due to their low frequency.

Independent variables

Treatment We included a dummy variable *body camera*, which takes the value 1 if the officer was assigned to wear a camera and 0 if the officer was in the control condition. We included a second dummy variable, *volunteer*, which takes the value of 1 if the officer volunteered to receive a camera and a value of 0 if the officer was assigned to wear a camera by mandatory assignment.

Discretionary policy Halfway through the study period, the department policy on how officers were to use the cameras was altered. During the first 5 months of implementation (Nov 1, 2012 to Apr 23, 2013), officers were directed "when practical, officers will make every effort to activate the on-officer body camera when responding to a call or having any contact with the public" (Mesa Police Department 2013). Under this mandatory activation policy, officers were instructed to activate the camera as they approached the scene of the call or at the point of initiation. The camera policy was changed to discretionary activation during the last 5 months of the evaluation period (Apr 24, 2013 to Oct 1, 2013). During this period, officers were given the latitude to "exercise discretion and activate the on-officer body camera when they deem it appropriate" (Mesa Police Department 2013). We included a control variable indicating whether the police–citizen contact occurred during the discretionary period (1) or the mandatory period (0).

Control variables

Demographics and incident characteristics We included control variables for the officer's age, gender, whether the officer was African American, whether

the officer was Latino/Hispanic, and level of education. We also included several controls for the incident. Specifically, we controlled for whether other officers were present, the presence of bystanders, whether a suspect was present, the presence of a victim, whether a supervisor was present, whether the officer was the lead decision-maker, and whether the officer was called in as backup.[7] [8]

Analytic strategy

The data were structured into two hierarchical levels: Field contact reports (level 1) nested within officers (level 2). Hierarchical generalized linear modeling (HGLM) was used to accurately estimate standard errors of clustered cases within larger units (Raudenbush and Bryk 2002). Since we measured officer behavior and helpfulness of cameras with binary outcome variables, we used a two-level hierarchical logistic regression and estimate multilevel models with xtmelogit in STATA 13.[9] We report the log-likelihood, AIC, and BIC to evaluate model fit and intra-class correlation (ICC).

Results

Bivariate analysis

Figure 1 shows the bivariate analysis for officer actions and perceptions of OVC technology between the treatment and comparison groups. The figure shows that officers assigned to wear cameras issued 23.1 % more citations and initiated 13.5 % more citizen encounters compared to the comparison group. In contrast, the comparison group conducted 9.8 % more stop-and-frisks and made 6.9 % more arrests (misdemeanor and felony). Interestingly, the percentage difference in stop-and-frisk behavior between the two groups is larger than the actual percentage of stop-and-frisks conducted by the treatment group. In addition, the figure indicates that officers in the treatment group were 25.2 % more likely to perceive OVC technology as being helpful in the particular type of situation in which they were involved. Interestingly, the percentage difference in the perception of camera helpfulness between the two groups is twice as large as the actual percentage of perceived helpfulness for the comparison group. Finally, although comparison officers were slightly more likely to give a verbal warning or command to a citizen, the difference appears trivial.

[7] Appendix B shows the descriptive statistics for the measures used in the study.

[8] Differences of means tests for field contacts involving treatment and control officers are shown in Appendix C.

[9] In multilevel models, level-1 characteristics explain *within*-unit variation in the dependent variable, whereas level-2 characteristics estimate *cross*-unit variation in the dependent variable. We are primarily interested in explaining officer behavior and helpfulness of cameras between officers as a consequence of being assigned a camera (a level-2 effect), while taking into account incident characteristics (level-1).

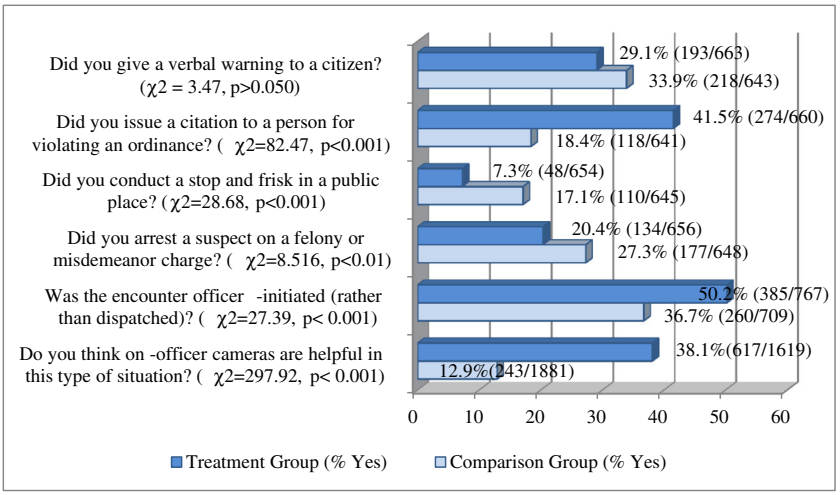

Fig. 1 Police officer actions and helpfulness of OVC technology: treatment vs. comparison group officers (observed χ^2 statistic with p value shown in *parentheses*)

Multilevel analysis

Officer behavior

Table 1 shows the HGLM models predicting whether an officer gave a warning, issued a citation, performed a stop-and-frisk, made an arrest, and whether the officer initiated the incident. Since the dependent variables are binary measures, we report odds ratios for these models. Odds ratios significantly above 1.0 represent a positive effect on officer behavior and odds ratios significantly below 1.0 represent a negative effect on officer behavior. Table 1 indicates that officers assigned to wear cameras were more likely to issue citations, initiate encounters, and less likely to perform a stop-and-frisk, even after controlling for officer and situational characteristics. There was no effect of having a camera for giving a warning or making an arrest once the controls were included. Additionally, arrests were more likely to occur during the discretionary period of activation, relative to the mandatory period of activation.

Camera helpfulness

Table 2 shows the HGLM models predicting whether the officer perceived body-worn cameras to be helpful for that particular type of incident. Model 6 includes the effects for the type of policy (i.e., mandatory vs. discretionary) and the effects for having a camera (i.e., treatment group). The model indicates that officers assigned a camera were more likely to report after an incident that OVCs were helpful in that type of situation. Those officers who volunteered to wear a camera were much more likely to perceive the cameras as helpful relative to control and treatment officers who were mandatory assigned. Model 7 includes the effects for officer behavior. Interestingly, all of the officer behavior effects are significant,

Table 1 HGLM models predicting officer behaviors (odds ratios with standard errors in *parentheses*)

	Model 1: warning	Model 2: citation	Model 3: stop-and-frisk	Model 4: arrest	Model 5: officer-initiated encounter
Variables					
Discretionary period	1.171 (0.156)	0.843 (0.127)	1.072 (0.198)	1.419* (0.211)	0.885 (0.081)
Volunteer	0.495 (0.248)	4.014** (2.326)	0.498 (0.359)	0.807 (0.424)	0.980 (0.392)
Body camera	0.882 (0.209)	1.849* (0.503)	0.449** (0.150)	0.783 (0.178)	1.766** (0.346)
Constant	1.614 (1.438)	0.069** (0.071)	0.449 (0.524)	0.140** (0.088)	0.614 (0.492)
Random effects					
Intercept	0.843 (0.107)	0.973 (0.119)	1.024 (0.149)	0.650 (0.107)	0.838 (0.083)
Intraclass correlation	0.177	0.223	0.241	0.114	0.175
Log-likelihood	−898	−730	−523	−731	−717
AIC	1824	1488	1075	1491	1463
BIC	1901	1566	1153	1568	1549

Control variables are estimated in the models but excluded from the table for clarity

*** $p<0.001$, ** $p<0.01$, * $p<0.05$

except for whether the officer initiated the encounter. Model 7 shows that officers were more likely to perceive the cameras as useful, net of whether they actually had a camera, in situations where they issued a warning or citation, performed a stop-and-frisk, and made an arrest.

Table 2 HGLM models predicting camera helpfulness (odds ratios with standard errors in parentheses)

	Model 6	Model 7
Variables		
Discretionary period	0.900 (0.109)	1.066 (0.193)
Volunteer	6.282*** (2.248)	4.155*** (1.112)
Body camera	3.308*** (0.798)	2.483*** (0.754)
Warning	–	3.543*** (0.709)
Citation	–	1.959** (0.490)
Stop-and-frisk	–	1.632* (0.340)
Arrest	–	2.023** (0.482)
Officer-initiated encounter	–	0.890 (0.170)
Constant	0.007* (0.011)	0.003*** (0.006)
Random Effects		
Intercept	1.784 (0.181)	1.696 (0.200)
Intraclass correlation	0.491	0.466
Log-likelihood	−1105	−605
AIC	2236	1249
BIC	2315	135

Control variables are estimated in the models but excluded from the table for clarity

***$p<0.001$, **$p<0.01$, *$p<0.05$

Discussion

The goals of this study were to examine how body-worn cameras affect police–citizen interactions and perceptions of the technology in the field (i.e., perceived helpfulness), controlling for effects of policy and assignment. Our longitudinal analysis of police behavior and perceptions of OVCs in a controlled experiment revealed several key findings that warrant further discussion.

First, our study finds support for the claim that police officers are more risk averse and cautious about their actions when wearing on-officer video technology. Officers equipped with OVCs conducted significantly fewer stop-and-frisks and arrests than officers who were not wearing the technology. Importantly, the effect of wearing a camera on stop-and-frisks was significant after controlling for officer assignment (mandatory vs. voluntary) and the camera activation policy. This finding suggests that camera officers may have been thinking more carefully about what constitutes reasonable suspicion in stop-and-frisk situations and probable cause during arrests (see Fagan et al. 2010). With on-officer video evidence, there is potential for greater scrutiny over criminal procedure and policy violations. Our results suggest that officers are more self-aware when the camera is on because the video may be reviewed internally by supervisors, or by public request via the Freedom of Information Act (5 U.S.C. 552, as amended).

A second important finding is that officers wearing video cameras issued significantly more citations for ordinance violations than comparison officers did. Camera officers appeared to be concerned that they may be reprimanded for *not* writing tickets when video evidence showed that a citizen violated an ordinance or traffic law. This suggests that on-officer video cameras have the potential to make officers more risk averse when contemplating two types of actions: (1) actions that are a civil liability to the department (i.e., abuse of authority) and (2) actions that are a personal liability to the officer (i.e., neglect of duty).

Our third key finding relates to officer-initiated contacts by camera officers. At the outset of the study, a major concern among the commanding officers was that body-worn cameras might cause officers to be less proactive or more reluctant to initiate contacts with citizens, instead focusing most of their time on dispatched calls. We found this not to be the case. On the contrary, camera officers actually initiated significantly more contacts with citizens than comparison officers.

Neither voluntary assignment to the treatment group nor the discretionary activation period had a significant effect on proactive contacts with citizens (as opposed to dispatched calls). One explanation for this finding may be that body-worn cameras enable officers to record suspicious activities on the street *before* initiating contact with a suspect. This may give them more justification and confidence to initiate a police–citizen encounter. As a result, officers appear to be more proactive with this technology without increasing their use of invasive strategies that may threaten the legitimacy of the organization.

The last finding relates to the perceived helpfulness of body-worn cameras. Camera officers were more likely than comparison officers to report after a police–citizen encounter that OVCs are helpful in that type of situation. This treatment effect remained significant after controlling for officer assignment

(mandatory vs. voluntary) and the activation policy. Perhaps not surprisingly, voluntary assignment also had a positive effect on the perceived helpfulness of the cameras after a police–citizen encounter. Moreover, officers were more likely to report that OVCs are helpful in situations where they conducted an arrest, stop-and-frisk, citation, or warning during the encounter. Overall, our findings suggest that police are more likely to see the practical utility of the OVCs when they are assigned to wear them and during encounters where they must take coercive action.

A number of limitations in this study present opportunities for future research on OVCs. First, researchers should consider conducting randomized controlled trials (RCT) using volunteers. This approach is methodologically rigorous and does not create as much friction among police unions and managers who are resistant to mandatory assignment of the technology. This is the safest option for researchers who have long-term working relationships with local agencies. The cost in terms of external validity is that research findings may only be generalized to volunteers. Alternatively, researchers can conduct a randomized trial where assignment to experimental groups is mandatory. In many cities, police administrators will encounter political opposition to this approach. It also has a greater risk of attrition because officers who are mandatorily assigned to treatment groups may request patrol reassignment during a department-wide rebid.

It is important to study how mandatory and voluntary assigned officers differ in their opinions and experiences with OVCs in the field, and to control for this condition statistically. Half of the treatment officers were selected from a list of volunteers and the other half of the treatment officers were mandatory-assigned. Future research may consider a larger sample of officers that would allow for random assignment to the control group. Researchers may also consider a longer follow-up period for measuring changes in officers' behavior and opinions about OVCs over time. Finally, the Axon Flex used by the Mesa Police Department is different in function and appearance from other cameras available to law enforcement. Our results may not be applicable to agencies using other types of technology.

The purpose of the study was to observe the effects of OVCs on police behavior, add to our understanding of how organizational procedures affect the legitimacy and spread of new technology, and assist departments in developing their own policies. The diffusion of technology in the field of policing is a complex process. Police executives may support new technology that brings greater accountability and less civil liability, but line officers focus on how it may limit their use of discretion in the field. Empirical support showing that OVCs can help departments achieve their goals will reduce the time needed for this technology to gain legitimacy. Our findings represent a preliminary step in that direction.

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Appendix A

Table 3 Difference of means tests for police officer characteristics by treatment and control group

Police officer characteristics	Treatment (n=50)	Control (n=50)	Two-tailed significance level
Years of policing experience	9.9	10.8	0.310
Age (in years)	35.9	37.5	0.343
Race (non-white)	24.0 %	26.0 %	0.744
Rank (officer)	98.0 %	100.0 %	0.276
Complaints (in past year)	0.60	0.50	0.163
Education (4-year degree)	32.0 %	36.0 %	0.395
Gender (female)	8.0 %	10.0 %	0.819

Appendix B

Table 4 Descriptive statistics

	Mean	Standard deviation	Min	Max
Warning	0.234	0.423	0	1
Citation	0.335	0.472	0	1
Stop-and-frisk	0.062	0.242	0	1
Arrest	0.148	0.355	0	1
Officer-initiated encounter	0.344	0.475	0	1
Helpfulness of camera	0.407	0.491	0	1
Male	0.976	0.151	0	1
Age	35.519	6.472	25	50
African American	0.074	0.263	0	1
Hispanic	0.235	0.424	0	1
High school	0.090	0.286	0	1
Some college (but not graduate)	0.422	0.494	0	1

Appendix C

Table 5 Difference of means tests for field contact reports by treatment and control officers

	Treatment (n=50)	Control (n=50)	Two-tailed significance level
Policy	0.595	0.636	0.015
Warning	0.234	0.261	0.185
Citation	0.335	0.143	0.000
Stop-and-frisk	0.062	0.111	0.000
Arrest	0.148	0.178	0.032
Officer-initiated encounter	0.344	0.233	0.000
Helpfulness of camera	0.407	0.135	0.000
Male	0.976	0.968	0.169
Age	35.519	37.219	0.000
African American	0.074	0.081	0.449
Hispanic	0.235	0.144	0.000
High school	0.090	0.017	0.000
Other officers present	0.585	0.683	0.000
Officer was backup	0.316	0.386	0.000

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