



# Experiment on camera perspective bias in videos of police-citizen encounters

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## Abstract

**Objectives** This study tested camera perspective bias in evaluating a video-recorded police and citizen interaction.

**Methods** Using professional actors, a simulated police-citizen traffic stop was recorded from three camera perspectives – police, citizen, and bystander. A sample of 830 participants recruited from Amazon’s Mechanical Turk viewed one of the three randomly assigned videos before rating police behavior and legitimacy during the encounter.

**Results** We found no evidence of the effects of camera perspective on how individuals evaluated a police traffic stop. Higher pre-test perceived police legitimacy was associated with more positive perceptions of police behavior and legitimacy during the encounter.

**Conclusions** This study highlights the role of general perceptions of police legitimacy in evaluating a video-recorded police-citizen encounter. Possible explanations for the lack of camera perspective bias, as well as potential research uses of custom-recorded videos, are discussed.

**Keywords** Camera perspective bias · Routine police-citizen encounter · Police legitimacy · Experiment

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## Introduction

Recent years have seen greater attention to public perceptions of police legitimacy as video recordings of police-citizen encounters have become increasingly commonplace and accessible to the public (Parry et al., 2019). Legitimacy is formed most strongly via interactions with police officers (Bradford et al., 2014). Many people have limited direct contact with police, and much of their experience comes through the media. Viewing recorded interactions between police and other citizens presented in the media can provide a vicarious experience of encounters with police, which can shape one's view of police legitimacy (Parry et al., 2019; Tyler & Trinkler, 2018).

Videos present different points of view that can influence subsequent perceptions. Police-citizen encounters are increasingly recorded by officer body-worn cameras that depict a police's point of view on encounters. Others are filmed by citizens involved in police contacts, showing a citizen's point of view. Activists or bystanders have generated numerous video recordings, providing a third party's point of view. Among the noteworthy dimensions of George Floyd's murder in 2020 is the significant role of perspective in video recordings of the incident. Police body-worn camera recordings showed the incident from the perspective of police officers on the scene. It was not until video recordings by a bystander were released that the full dimensions of the tragedy became evident (Burch & Eligon, 2020).

While perspective bias is reflected in the different videos of George Floyd and Minneapolis police, other elements are present that make it difficult to isolate how camera perspective may have played a role. The extreme nature of police violence shown against an African American man focuses viewer attention on violence, not perspective. Views from police body cameras showed one man struggling and resisting, while the bystander video presented multiple police officers subduing a single subject. All videos displayed the struggle itself, not the events that prompted it. These and other features of videos revealed a complex, volatile, uncertain interaction. Somewhat akin to a laboratory experiment, our research controls the nature setting and participants of a relatively benign incident to isolate the possible effects of camera perspective bias.

In this report, we describe an experiment to test camera perspective bias in videos of a police-citizen traffic encounter. Traffic encounters are the most common contacts most people have with police (Tapp & Davis, 2022). We reasoned that a routine traffic encounter is well-suited to isolate the effects of camera perspective by limiting impacts of other features such as the demeanor of the driver/police dyad. With professional assistance, we produced a video recorded from three camera perspectives: police, driver, and bystander. Based on a sample of 830 participants recruited for an online survey through Amazon's Mechanical Turk (MTurk), we examined how the camera perspective might affect perceptions of police behavior and legitimacy during the encounter.

## Background

How observers evaluate interpersonal interactions shown in video footage is known to be systematically influenced by the camera's location or perspective, a phenomenon referred to as camera perspective bias (Lassiter, 2002; Lassiter &

Irvine, 1986). The mechanism is explained as a concept of illusory causation, a tendency to erroneously attribute causality to objects that are most pronounced in the visual field (McArthur, 1980). Camera perspective bias has been reported for judgments regarding the coerciveness of police interrogations. It is well documented that video-recorded interrogations are judged as more coercive in a detective-focused video than in a suspect- or equal-focused video (Lassiter, 2002; Park & Pyo, 2012; Ratcliff et al., 2006).

Only a few empirical studies have examined camera perspective bias in evaluating videos of police-citizen interactions (e.g., Boivin et al., 2017; Hernandez, 2020; Parry et al., 2019; Poirier et al., 2022). Boivin and colleagues (2017) showed a staged encounter filmed from two perspectives to samples of undergraduate students and police candidates. They found that the BWC perspective (vs. surveillance camera perspective) led to more negative views about the same police intervention for police candidates, but not for university students. Parry et al. (2019) used a video of an incident from a suspect's cell phone and a video of the same incident recorded by the involved police officer. Findings show that watching the video from the police vs. citizen perspectives had no impact on perceptions of police. Some evidence of camera perspective effects was reported by Hernandez (2020), using bystander and police recordings of two incidents. However, Hernandez (2020) used online videos that depicted violent encounters with substantial variation in what can be seen from police and bystander perspectives. He describes problems in selecting comparable videos after reviewing hundreds of examples (p. 38). Comparing three versions of the camera perspective (CCTV, cell phone, and BWC) from a television report of a violent encounter, Poirier et al. (2022) found that the BWC perspective induced more negative evaluations about the officer.

Videos of police-citizen encounters are now widely available and have been increasingly used in research on perspective bias. However, virtually all research has relied on publicly available videos that depict either extreme encounters (e.g., discharging firearms), limited camera perspectives, or both. It is important to disentangle the confounding effects of incident and participant characteristics from perspective bias. Our research on the possible role of camera perspective is based on a routine, relatively neutral encounter in a controlled setting. In this way, we are able to isolate the influence of camera perspective from other features of complex events.

## Hypotheses

Camera perspective bias suggests that viewers attribute the causality of interactions to the figure that captures the visual attention (McArthur, 1980). Accordingly, we tested the following hypotheses.

**H1:** Individuals will perceive police intervention as most appropriate when the camera is focused on the driver (police's point of view) and least appropriate with a camera focused on the officer (driver's point of view).



**Fig. 1** Camera's point of view

**H2:** Individuals will perceive the officer in the video as most legitimate when the video is filmed with a camera focused on the driver (police's point of view) and least legitimate with a camera focused on the officer (driver's point of view).

## Methods

### Design and materials

The experiment was a one-factor between-subjects design with three levels of camera perspective – police's, driver's, and bystander's point of views. Using professional actors and production staff, we produced a brief video of approximately 2 min that captured a simulated routine traffic stop. We scripted the dialogue and behaviors for both the officer and the driver to be as neutral as possible.<sup>1</sup> In the encounter, a uniformed officer (a White male in his early 30 s) issued a traffic citation to the driver (a Latino male in his late 20 s) for failing to stop at a stop sign. This brief encounter involved mostly a verbal exchange with no threats or use of force by the officer and a compliant driver. The sequence of events involved the officer (1) explaining the reason for the traffic stop, (2) requesting and reviewing the driver's license, registration, and proof of insurance, (3) issuing a traffic citation, and (4) releasing the driver while advising to slow down and stop come to a complete stop at stop signs.

Videographers and sound engineers recorded the identical traffic stop encounter from three camera perspectives: police, driver, and bystander (see Fig. 1 for sample image stills). To be clear, we manipulated only the camera perspective, while other elements in the video-recorded encounter remained constant across different camera perspective conditions. For the police's point of view condition, the video was shot from the perspective of a police body-worn camera and showed the driver but not the officer. For the driver's point of view condition, the video was shot from the perspective of a driver's cell phone camera and showed the officer but not the driver.

<sup>1</sup> The script was reviewed by criminal justice students and faculty with a background in law enforcement for accuracy in the depiction of a stereotypical traffic stop. Subsequently, the script was refined based on feedback from a professional script writer and a professor in Theater Arts to include the necessary information for guiding the actors' performance.

For the bystander's point of view condition, the video was shot from the perspective of a bystander's cell phone camera showing both the officer and the driver.

## Participants

Using MTurk, we initially recruited 1216 participants who had previously completed 500 or more Mturk Human Intelligence Tasks (HITs), with at least a 97% approval rating. Following Pyo and Maxfield's (2021) suggestions on screening inattentive or unengaged participants, we included several unobtrusive attention checks throughout the survey. In total, 831 (68.3%) participants passed all attention checks. After excluding one non-binary respondent due to the small group size for analyses, the final sample was composed of 830 individuals (44% female, mean age = 38.16). Participants were randomly assigned to either police's ( $N=267$ , 32.2%), driver's ( $N=272$ , 32.8%), or bystander's point of view condition ( $N=291$ , 35.1%). Results of balance tests (not reported here) indicated no systematic difference among the three conditions in terms of participants' socio-demographics, police contacts in the past, and general perceptions of police legitimacy.

## Procedures

Prior to watching the video recording, participants completed questions asking about their general perceptions of police legitimacy. Next, each participant viewed only one randomly assigned video, either police-, driver-, or bystander-perspective video. After watching the video, participants completed items on the perceived appropriateness of police behavior and legitimacy during the encounter. Finally, participants completed items on socio-demographic characteristics and direct and vicarious police contacts in the past five years.

## Measures

Descriptive statistics for all measures are presented in Table 1. See the [Appendix](#) for descriptive statistics and factor loadings for individual items measuring perceptions of police. We adopted legitimacy and related items used in previous studies (Hamm et al., 2017; Solomon, 2019; Trinkner et al., 2018; Tyler, 2006; Tyler & Trinkner, 2018). All items used a 7-point Likert scale (1 = strongly disagree; 7 = strongly agree) with higher scores indicating a more positive perception about the construct being measured. Confirmatory factor analysis indicated a good fit of the measurement model for each construct.

### Pre-test measure: global police legitimacy

Following previous research (Hamm et al., 2017; Trinkner et al., 2018; Tyler, 2006), we assessed two dimensions of global police legitimacy: (a) duty to obey (3 items), obligation to comply with the police directives and decisions; and (b) normative

**Table 1** Measure descriptive statistics

	<i>M (or proportion)</i>	<i>SD</i>	<i>Range</i>
Global legitimacy			
Duty to obey	4.62	1.17	1–7
Normative alignment	5.22	1.23	1–7
Appropriateness			
Procedural justice	5.88	.94	1–7
Bounded authority	4.26	2.05	1–7
Encounter legitimacy			
Duty to obey	5.64	1.13	1–7
Normative alignment	5.52	1.03	1–7
Gender (female)	.44		0–1
Race (White)	.84		0–1
Age	38.16	11.46	19–73
Education	4.73		
Less than high school	.08		0–1
Some college	.11		0–1
Bachelor's degree	.66		0–1
Graduate degree	.15		0–1
Income			
\$0 to \$20,000	.06		0–1
\$20,001 to \$40,000	.22		0–1
\$40,001 to \$70,000	.44		0–1
\$70,001 or more	.28		0–1
Political ideology (1 = very liberal; 7 = very conservative)	4.04	2.27	1–7
Direct police contact			
Individual initiated (yes)	.68		0–1
Police initiated (yes)	.56		0–1
Vicarious police contact (yes)	.69		0–1

alignment (3 items), belief that police share their values about appropriate behavior. Responses for duty to obey and normative alignment were averaged across their respective items to create two mean indices.

### Dependent variables: appropriate police behavior

We used a five-item measure of appropriate police behavior during the traffic stop. Following existing approaches (Trinkner et al., 2018; Tyler & Trinkner, 2018), we considered two dimensions of normatively appropriate police behavior: (a) procedural justice (3 items), perception that the officer in the video is procedurally just and (b) bounded authority (2 items), perception that the officer in the video acts within the limits of

**Table 2** One-way ANOVA: effects of camera perspective on perceptions of police during the traffic stop

	Camera perspective			<i>F</i>	<i>p</i>
	Police's point of view	Driver's point of view	Bystander's point of view		
Dependent variable	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>		
Appropriateness					
Procedural justice	5.82 (.97)	5.93 (.94)	5.90 (.92)	1.01	.364
Bounded authority	4.18 (1.99)	4.26 (.60)	4.33 (.57)	.39	.678
Encounter legitimacy					
Duty to obey	5.58 (1.10)	5.69 (1.05)	5.66 (1.22)	.68	.508
Normative alignment	5.45 (1.08)	5.50 (1.05)	5.61 (.97)	1.67	.189

rightful authority. Responses for procedural justice and bounded authority were averaged across their respective items to create two mean indices.

### Dependent variables: encounter-specific police legitimacy

Drawing on existing measures (Hamm et al., 2017; Solomon, 2019; Trinkner et al., 2018; Tyler, 2006), we constructed a 5-item measure tapping into two dimensions of encounter-specific legitimacy or perceived legitimacy of the officer in the video: (a) duty to obey (2 items) and (b) normative alignment (3 items). Responses for duty to obey and normative alignment were averaged across their respective items to create two mean indices.

### Individual characteristics

We controlled for socio-demographic characteristics including gender, race/ethnicity, age, education, income, and political ideology. We also controlled for direct (individual- and police-initiated) and vicarious contacts with police in the past five years.

## Results

First, we employed a one-way analysis of variance (ANOVA) to compare the three groups of camera perspectives on the dependent variables (Table 2). The camera perspective was not related to the perceived appropriateness of police behavior and legitimacy during the traffic stop encounter. Participants generally expressed positive views about the officer regardless of the camera perspective. Mean responses for perceived procedural justice, duty to obey, and normative alignment ranged between “slightly agree” and “moderately agree” categories. Mean responses for perceived bounded authority ranged from “neutral” and “slightly agree” categories. Overall, findings did not support differing effects on perceptions about the officer based on different camera perspectives.

Next, we employed ordinary least squares (OLS) regressions to determine the simultaneous associations of the camera perspective and other predictors with each outcome measure (Table 3). Consistent with the bivariate analysis, we found limited evidence of camera perspective bias. The effects of camera perspective were significant only for normative alignment. The bystander's point of view resulted in a greater sense of normative alignment than the police's and driver's point of views.

We found significant effects of the pre-test on perceived police legitimacy. Individuals with a higher perceived duty to obey and normative alignment with the police in their community perceived the officer's behavior as more appropriate and legitimate. Tests of equality of coefficients showed that global normative alignment had stronger effects than global duty to obey on perceptions of procedural justice,  $\chi^2(1, N=812)=6.09, p=0.014$ ; encounter-specific duty to obey,  $\chi^2(1, N=812)=33.27, p<0.001$ ; and encounter-specific normative alignment,  $\chi^2(1, N=812)=55.34, p<0.001$ . Results indicate an important role of general normative alignment with the police in shaping perceptions of video-recorded police-citizen encounters.

## Discussion and conclusion

The present study tested camera perspective bias in evaluating a video-recorded simulated traffic stop. We hypothesized that individuals would perceive the officer's behavior as most appropriate (H1) and as most legitimate (H2) when the video is filmed from the officer's point of view (vs. the driver's and the bystander's point of views). Analyses did not support either hypothesis. Multivariate analyses showed only limited effects of camera perspective. The bystander's point of view resulted in slightly greater perceived normative alignment with the officer in the video than the police's and driver's point of views. The bystander perspective provides greater distance from the interaction while providing a broader view of the police-driver interaction. Such a "third party's" point of view may reduce negative emotional responses to this police-initiated encounter. However, more research is needed to understand the underlying mechanism and to generalize the findings of this study.

These results align with the findings of Parry et al. (2019), but not with other empirical studies on assessing camera perspective bias in police-citizen encounters (Boivin et al., 2017; Hernandez, 2020; Poirier et al., 2022). Similar to Parry et al. (2019), we used a video recording of a relatively neutral police-citizen interaction, with no use of force. In contrast, studies that have reported some evidence of camera perspective effects used videos that depicted violent or otherwise negative encounters. We interpret this as evidence that camera perspective bias may be context-specific depending on the nature of the interaction recorded. It is possible that the effects of camera perspective may not manifest in mild and neutral police encounters, such as a routine traffic stop used in this study. However, camera perspective bias could prove significant in other types of encounters that are potentially contentious, where perceptions of police intervention may vary depending on the camera's perspective or location capturing the intervention.



**Table 3** OLS regressions predicting perceived appropriateness of police behavior and encounter legitimacy ( $N = 830$ )

	Procedural justice			Bounded authority			Legitimacy: duty to obey			Legitimacy: normative alignment		
	<i>b</i>	95% CI		<i>b</i>	95% CI		<i>b</i>	95% CI		<i>b</i>	95% CI	
Camera perspective (ref: bystander's point of view)												
Police's point of view	-.09	-.24; .05		-.12	-.40; .17		-.13	-.29; .04		-.19**	-.33; -.05	
Driver's point of view	-.02	-.16; .13		-.16	-.45; .13		-.03	-.19; .14		-.16*	-.30; -.02	
Global legitimacy: duty to obey	.08**	.03; .14		.12*	-.23; .01		.08**	.02; .15		.09**	.03; .14	
Global legitimacy: normative alignment	.20***	.15; .26		.14*	-.25; .02		.40***	.33; .46		.44***	.38; .49	
Gender (female)	.08	-.05; .20		.05	-.19; .30		.10	-.04; .24		.07	-.05; .20	
Race (White)	-.16	-.33; .01		.02	-.32; .37		-.05	-.25; .15		-.05	-.22; .12	
Age	.004	-.001; .01		.02***	.01; .03		.002	-.003; .01		.002	-.004; .01	
Education (ref: high school or less)												
Some college	-.004	-.29; .28		.53	-.03; 1.10		-.03	-.35; .29		-.15	-.43; .13	
Bachelor's degree	-.55***	-.79; -.31		-1.02***	-1.50; -.54		-.47***	-.74; -.20		-.49***	-.33; -.05	
Graduate degree	-.34*	-.63; -.05		-1.31***	-1.89; -.73		-.32	-.65; .01		-.30*	-.59; -.02	
Income (ref: \$0 to \$20,000)												
\$20,001 to \$40,000	-.15	-.43; .13		-.34	-.90; .22		.07	-.26; .39		-.03	-.30; .25	
\$40,001 to \$70,000	-.17	-.44; .10		-.14	-.68; .40		.17	-.14; .47		-.03	-.30; .23	
\$70,001 or more	-.11	-.40; .18		.04	-.54; .61		.21	-.12; .54		-.10	-.38; .18	
Political ideology												
Direct police contact: individual initiated	-.03	-.05; .00		-.07**	-.13; .02		-.01	-.04; .02		.001	-.03; .03	
Direct police contact: police-initiated contact	-.29***	-.43; -.14		-.75***	-1.03; -.47		-.19*	-.35; -.03		.02	-.12; .15	
Vicarious police contact	-.09	-.22; .03		-.56***	-.82; -.31		-.01	-.15; .14		.13	-.22; .03	
(Constant)	5.24***	4.79; 5.70		7.11***	6.19; 8.02		2.3**	.06; .39		.17*	.03; .31	
$R^2$	.18			.30			.26	2.85; 3.89		3.26***	2.81; 3.71	

\*  $p < .05$   
 \*\*  $p < .01$   
 \*\*\*  $p < .001$

Mean variance inflation factors (VIF; the diagnostic information for multicollinearity) were 2.15, indicating that collinearity was not an issue in the current analysis

It is especially noteworthy that individuals' general perceptions of police legitimacy were more salient predictors of each outcome than the camera perspective. Participants who scored higher in the pre-test global legitimacy were more likely to positively evaluate the officer's behavior displayed in the video. When individuals perceive the police in their community as legitimate, they are likely to view the officer's actions as appropriate and legitimate in line with what is reported in the literature (Hernandez, 2020). Adding to existing legitimacy literature, our analysis found that the two dimensions of global legitimacy, normative alignment and felt duty to obey the police, can have different effects on perceptions of video-recorded police-citizen interactions. We found that perceived normative alignment with the police had stronger impacts on how one views the officer's intervention. A sense of normative alignment reflects the extent to which people believe authorities share moral values that are important to them, and it can influence law-related attitudes and behaviors (Jackson et al., 2012).

Limitations of this research are acknowledged. First, we used a recording of a neutral and short interaction, which may be insufficient to measure camera perspective bias. Our finding suggests the importance of future studies investigating how the camera perspective effects can be contingent upon the type of police-citizen interactions (neutral vs. violent). Second, our video depicted a White male police officer and a Hispanic male driver. Since a single video was recorded, it was not possible to account for possible confounding effects of the racial composition of the parties involved, as reported by Solomon (2019). Given that race is a potentially important factor influencing perceptions of police encounters captured on video, future experiments should incorporate the manipulation of demographics of the police/citizen dyad including their race/ethnicity. Although we found little evidence of camera perspective bias within our limited focus on the type of encounter and characteristics of the police/citizen dyad, our findings serve as a valuable baseline for investigating variations in such factors in future studies.

Apart from these limitations, this experiment adds to the body of literature on assessing the perceptions of video-recorded police contact. We have demonstrated that simulating and recording police-citizen contacts is a suitable method for future research on this topic. In our attempts to find videos of actual encounters, we were struck by the extreme level of violence and other conflicts shown in most videos. Videos were typically recorded by bystanders or news organizations, occasionally body-worn camera videos from police departments. None showed routine interactions. The only source of "neutral" videos we found were those prepared by law enforcement agencies showing some version of how to conduct a traffic stop or advising drivers on how to behave during a traffic stop. Our approach is truly experimental in its ability to control features of citizen encounters with police. Future research can vary demeanor, ethnicity, age, language fluency, and setting in efforts to understand extra-legal influences on how people perceive police-driver interactions.

## Appendix

**Table 4** Descriptive statistics and factor loadings for items of perceptions of police

Perceptions of police (construct and item indicators)	<i>M</i>	<i>SD</i>	<i>Std. loading</i>
Global legitimacy: duty to obey ( $\alpha = .74$ )	4.62	1.17	
I should support the decisions of the police in my community even when I disagree with them	4.36	1.44	.39
I should do what the police in my community tell me to do even if I do not understand the reasons	4.77	1.55	.76
I should do what the police in my community tell me to do even if I do not like how they treat me	4.72	1.55	.77
Global legitimacy: normative alignment ( $\alpha = .82$ )	5.22	1.23	
The police in my community usually act in ways consistent with my own ideas about what is right and wrong	5.03	1.49	.84
The values of the police in my community are similar to my own	5.19	1.45	.73
I generally support how the police act in my community	5.45	1.37	.67
Appropriate police behavior: procedural justice ( $\alpha = .72$ )	5.88	.94	
The officer treated the driver fairly during the traffic stop	5.87	1.23	.64
The officer treated the driver with respect during the traffic stop	5.91	1.12	.54
The officer clearly explained the reason why he issued a traffic citation to the driver	5.86	1.19	.72
Appropriate police behavior: bounded authority ( $\alpha = .88$ )	4.26	2.05	
The officer overstepped the boundaries of his authority. (Reverse coded)	4.28	2.11	.92
The officer acted as if he is above the law. (Reverse coded)	4.23	2.21	.86
Encounter legitimacy: duty to obey ( $\alpha = .75$ )	5.64	1.13	
I would feel a moral duty to obey this officer's commands	5.62	1.27	.74
I would feel a moral duty to follow this officer's instructions	5.67	1.26	.81
Encounter legitimacy: normative alignment ( $\alpha = .73$ )	5.52	1.03	
The officer in the video represents values that are important to me	5.45	1.34	.76
The officer acted in ways consistent with my own ideas about what is right and wrong	5.32	1.34	.65
I generally support how the officer acted during the traffic stop	5.80	1.15	.67

Most items exhibited relatively normal distributions: Both skewness and kurtosis ranged from  $-1.5$  and  $+1.5$

All factor loadings were significant ( $p < .001$ )

Global legitimacy measure model (two-factor CFA):  $\chi^2 (7, N=830)=8.28, p=.309; CFI=.999; RMSEA=.015; SRMR=.009$

Appropriate police behavior measure model (two-factor CFA):  $\chi^2 (3, N=830)=2.64, p=.450; CFI=.999; RMSEA=.000; SRMR=.019$

Encounter legitimacy measure model (two-factor CFA):  $\chi^2 (4, N=830)=5.87, p=.209; CFI=.999; RMSEA=.024 SRMR=.011$

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**Data Availability** The datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request.

## Declarations

**Conflict of interests** The authors declare no competing interests.

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