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Psychological Perspectives on the Presentation of Video Evidence: How Perceivers Weight What is Seen and Unseen

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Psychological perspectives on the presentation of video evidence: How perceivers weight what is seen and unseen

by Yael Granot and David Igliozzi

Abstract

Video evidence is proliferating in the courtroom, outpacing the incremental advances in policies governing its use. Psychological research on attention and perception indicates that people are vulnerable to numerous biases in how they interpret video. The dynamic format of such evidence directs attention in distinct ways, and the visual system selectively captures some pieces of information at the expense of others. Thus, perceivers who must make decisions about video evidence are vulnerable to overweighting the information they see, underweighting the information they do not see, and being overconfident about their interpretation of what they see. We marshal emerging research on attention and cognition to consider perceivers' vulnerabilities to video evidence. Further, we ask whether instruction interventions may disrupt biases in decision-making about video evidence. We present pilot data suggesting that instructions to consider information missing from a scene might bridge the gap between disparate perceptions of body camera and dashcam footage of the same scene.

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Introduction

Video evidence is highly persuasive, potentially providing uniquely probative information — for example, documenting a crime that occurred in the absence of witnesses or in the presence of contradictory witnesses. Beyond the information it provides, however, video lends a sense of veracity to information because it ostensibly approximates for viewers a firsthand experience of events. Relative to photographs, video seems to convey an unmediated depiction of events, yet courts tend to treat these forms of demonstrative evidence interchangeably (Mnookin, 1998; Ristovska, 2020). Viewers may be particularly vulnerable to bias when considering video evidence; they tend to be naïve realists, believing, often inaccurately, that their visual experiences completely and truthfully represent reality (Feigenson and

Spiesel, 2019; Ross and Ward, 1996).

Much psychological research has demonstrated that characteristics of perceivers may influence what they see (Granot, *et al.*, 2018). People's motivations and identities may lead them to interpret the same visual information in starkly different ways. For example, when observing ambiguous stimuli, people tend to perceive images in a manner that aligns with their goals and ignore alternative or goal-inconsistent interpretations (Balcetis, *et al.*, 2012). Relatedly, group identities may determine what information people take in from visual stimuli. For example, without specific prompting to do so, White participants were more likely to notice a Black target walking across a scene than a White target; however, when interpersonal goals were activated, the reverse pattern emerged, enhancing attention to in-group targets (Brown-Iannuzzi, *et al.*, 2014). Such findings suggest that videotaped information may encourage divergent interpretations of the same events.

Beyond or sometimes interacting with these factors, what the camera captures or fails to capture may skew interpretations. In this paper, we consider how viewers may overweight what is presented and underweight what is missing in video evidence, maintaining great confidence in their interpretations. Finally, we grapple with how instructions or interventions that target visual experience might mitigate bias in how decision-makers evaluate video evidence.

People overweight what they see

Video footage makes the information it captures salient, leading legal decision-makers to give it great emphasis, due to cognitive connections between salience and agency. Information that commands attention, either because it is visually conspicuous or personally relevant, is often ascribed greater causal force within a scene (Borgida and Howard-Pitney, 1983). For example, in one study, the more time that participants spent looking at the police officer in a police–civilian interaction, the more likely they were to opt to punish that officer (Sternisko, *et al.*, 2017). Actors or other stimuli that are prominent within one's visual field can be ascribed an increased sense of agency (Taylor and Fiske, 1975).

This illusory causation has most frequently been discussed in work on the camera perspective bias (Ware, *et al.*, 2008). People evaluating videotaped confessions are more likely to believe that the suspect confessed voluntarily and is guilty if the camera is focused predominantly on the suspect ("suspect-focus perspective") than if the police officer appeared equally in the frame ("equal-focus perspective") (Lassiter and Irvine, 1986). Evidence suggests that camera perspective does not simply change what information is available; it alters the information on which perceivers focus. Indeed, there is evidence that visual attention, as measured by eyetracking technology, mediates camera perspective effects in evaluations of confession footage. Participants presented with a suspect-focused video (where the face of the suspect and a portion of the detective's back were visible) versus an detective-focused video (the reverse orientation) paid greater visual attention to suspect, which influenced their evaluations of confession voluntariness (Ware, *et al.*, 2008). Ware, *et al.* suggested that both the discrepancies in available visual content and the ways that availability shifted attentional focus predicted judgments. Even when the camera does not fully occlude alternate targets, its orientation can encourage attention to a particular actor and imbue that actor with greater agency over events.

Critically, effects of attention on evaluations are not necessarily universal, and they seem to be moderated by individual differences like group identity. For example, in one study participants watched a series of police–civilian interactions either from the perspective provided by a body-worn camera (BWC) video (such cameras are usually placed on officers' chests and highlight only the civilian, providing few, if any, visual cues of the officer) or from a third-person perspective (displaying both civilian and officer); the civilian's skin tone was also manipulated to appear either dark or light. The BWC perspective exaggerated White viewers' racial biases: dark-skinned civilians were perceived more negatively relative to light-

skinned civilians when BWC footage made them the object of primary focus; these biases in evaluations were mitigated for participants who watched the third-person perspective video (Bailey, *et al.*, 2021). In another study, when participants narrowly focused their attention on an officer in a videotaped police–civilian interaction, prior identification with police predicted punishment decisions about the officer — those with weak police identification opted to punish the officer more while those with strong police identification opted to punish less. However, this relationship did not emerge among those who paid relatively less visual attention to the officer (Granot, *et al.*, 2014). Narrowed attentional focus emphasized the officer but also marshaled perceivers' prior beliefs about police as they assessed the officer's legal responsibility. What this suggests is boundary conditions to original work like that of Taylor and Fiske (1975) — more attention may indeed lead to greater causal attributions, but in ambiguous situations where identity may be relevant, attention affects on causal attribution may be moderated by group identification. What perceivers focus on, often constrained or directed by what the camera captures, is weighted especially heavily in culpability judgments — but the degree of that weighting can be influenced by prior beliefs and expectations.

People underweight what they do not see

Just as people overemphasize the importance of what they see, they also underemphasize information they miss. Paying attention to one piece of information means that the attentional system, to some extent, shuts out other pieces of information, potentially rendering them invisible. Work on inattentional blindness, for example, demonstrates how information available and even central in one's visual field may elude conscious perception (Simons and Chabris, 1999). For example, in a study of expert perceivers — radiologists — lung scans were presented on which an image of a gorilla larger than an average nodule was imposed. Most radiologists failed to detect this image, though eyetracking revealed them to be looking directly at it (Drew, *et al.*, 2013). This blindness for information that is present but not processed is minor compared to when critical information is truly missing—perhaps just outside the camera's reach. Its absence mutes its impact on judgments.

This process is easily observed in research comparing responses to BWC footage and more complete dashboard camera footage. Across multiple experiments involving interactions between police and civilians, two civilians, or a civilian and an object, using both scripted and real-world footage, researchers found that BWC footage of an incident resulted in lower ratings of intentionality and blame of the camera-wearing actor than did third-person dashcam footage of the same scene (Turner, *et al.*, 2019). The researchers further demonstrated that this effect was driven by the reduced salience of the camera-wearer in BWC conditions. In a pilot study comparing hundreds of videos of police–civilian interactions from BWC and dashboard camera perspectives, they found that officers were visible for significantly less time in BWC footage relative to dashcam footage; officer time on screen in BWC footage included things like the arm of the officer entering the frame or their reflection in a car window. More frequent such instances of BWC screen time were associated with increased participant perceptions of officer intentionality, suggesting that differences in judgments between BWC and dashcam footage are at least in part due to the lack of salience of the camera-wearing actor in body-worn presentations.

Viewers, as naïve realists, often do not question the importance and potential relevance of what may be missing from footage. Indeed, "seeing pictures tends to reduce the subjective uncertainty that a greater awareness of the limits of one's own knowledge base or interpretive skills ought to yield, prompting overconfidence in one's perceptions and judgments" [1]. Reduced uncertainty precludes the questioning of missing information, leading perceivers to believe their representations of information to be complete and accurate. Further, the attentional system compellingly supports this lack of concern with what is missing, often by tricking perceivers into believing they saw more than they actually did.

Specifically, the visual system is adept at "filling in the blanks," heightening the perceived completeness of

information. Participants shown incomplete images — such as a minimal outline of a butterfly — tend to report having seen those images in a more complete and filled-in form, as with a more detailed butterfly drawing (Foley, *et al.*, 1997). Researchers argue that this does not simply reflect a response bias toward saying an image is complete; rather, it occurs because participants confabulate or fill in the blanks of an image when calling forth memories. This suggests a "closing in the missing contours in the mind's eye" [2]. Indeed, even when shown the original incomplete image next to the completed option, participants demonstrate this filling-in error, incorrectly believing they had previously been shown the completed image (Foley, *et al.*, 2007). This is related to work on boundary extension, a perceptual error in which perceivers confidently remember a more expansive scene than they were shown; they extend surfaces and textures, enlarging their representation beyond what was revealed (Intraub and Richardson, 1989). For example, in viewing an image of an alley with trash bins, perceivers may incorrectly remember seeing more of the alley beyond the bins than they actually did. They extend their memory, in large part due to expectations derived by context and individual experience (Intraub, 2012).

Due to these processes, visual evidence allows us to "think we know more than we really do. We can imagine a context that isn't really there" [3]. Decision-makers fail to consider what may be missing from available information; what goes unseen goes unconsidered.

People are overconfident in their interpretation of what they see

People trust their vision and proclaim this trust explicitly. In a survey of 1,400 people from 16 different countries, respondents were asked which of their five senses they would least like to lose. Regardless of age or gender, 70 percent indicated that vision was the sense they would least be able to do without (Balcetis, 2020). Indeed, vision is prioritized when it provides evidence that contradicts what other senses yield (Rock and Victor, 1964). The Colavita effect is a primary example of such visual dominance: When visual and auditory stimuli are presented simultaneously, participants are more likely to respond to the visual stimulus and may even report not perceiving the auditory stimulus at all (Colavita, *et al.*, 1976). Alternatively, the auditory stimulus may be distorted to match the visual input, as with the McGurk effect; when auditory syllables are paired with discrepant visual syllables, perceivers will either hear sounds consistent with the visual input or a blending of the visual and auditory information (McGurk and MacDonald, 1976).

People trust their own eyes to such an extent that they believe others' eyes are more fallible than their own. When imagining witnessing a live or video-captured police–civilian interaction, participants rated themselves as less susceptible to bias than the average U.S. person in their interpretations of the scene. Indeed, they were much more likely to agree that "If I'm paying very close attention to the event, I can prevent my worldview from affecting my understanding of [the video]" was true for themselves as compared with other perceivers (Jones, *et al.*, 2018). This echoes work on the bias blind spot (Pronin, *et al.*, 2002) and suggests a somewhat paradoxical understanding that bias in viewing video evidence is possible but that each viewer believes they are immune to such influences.

Confidence in visual experience may be heightened for those most motivated to interpret visual information in a particular way. When evaluating an incident involving a police officer and a civilian, participants who identified most strongly with the police, but not those who were weakly identified, demonstrated increased confidence in their verdicts when presented with video evidence (Sommers, 2015). Prior affinities for and connection to police led them to inflate the accuracy of their visual appraisals.

This extreme confidence may be facilitated by the fact that our visual experiences are rarely challenged. Perceivers display confirmatory visual search, seeking out what they hope and expect to find (Qu-Lee, *et al.*, 2022). For example, in searching a scene for a letter that could appear in one of two colors, participants' patterns of visual search were biased in favor of stimuli presented as the template color, despite this often not reflecting the most efficient or effective search strategy (Rajsic, *et al.*, 2015). Even when targets in a

cued color were rare or low in prevalence, people still demonstrated a confirmation bias in the way they searched the scene (Walenchok, *et al.*, 2020). By actively seeking confirmation of their interpretation, people may miss information that would disconfirm their beliefs.

The seemingly conscious control we have over our attention heightens people's confidence in their construals of visual information. Attention can be deployed in an active and voluntarily sustained or a more reflexive and nonconscious manner. Research suggests that viewers who engaged in a visual task and deployed their attention in a sustained and voluntary way were more confident about their decisions than those deploying their attention more reflexively (Kurtz, *et al.*, 2017). Further, Kurtz, *et al.* found that this seemingly conscious control over attention could lead to confidence that outstripped accuracy. Related findings emerged in a study that showed participants mock CCTV footage and asked them to identify whether a target "culprit" physically present in the room with them appeared in the footage. Perceivers were often inaccurate at identifying targets even when the video depicted targets' faces at close range, yet approximately 38 percent of incorrect identifications were made with a high degree of confidence (Davis and Valentine, 2009). People are confident that they can correctly and accurately interpret what they see.

Can instruction interventions help?

Despite people's vulnerability to overconfident error in interpreting video, few propose excluding it entirely from the legal process, acknowledging the probative information it can provide. Instead, researchers and policymakers have begun to formulate suggestions about how to maximize the quality of video evidence that makes its way into courts. Some suggest long-form videotaping of interrogations, as well as the automation of police BWC activation, to provide more complete videos of events in question (Kassin, *et al.*, 2010). Researchers have urged that, where possible, evidence should be obtained from multiple sources and perspectives. For example, participants who were shown BWC footage as well as surveillance footage of the same scene were less likely to demonstrate perspective biases in judgment that emerged when viewing only BWC footage [4]. Encouraging multiple officers to wear cameras that provide alternative angles of the same encounter is one potential solution. Such policy responses target overweighting — if perceivers emphasize the information they see, objective assessment requires them to see all possible, relevant information. However, there may only be one source of video, which suggests that interventions must also target how perceivers watch information.

Researchers have attempted to attenuate bias in responses to video by teaching viewers about such biases. One study gave participants a basic warning about the camera perspective bias ("your judgments could be affected by the angle of the camera"); this warning had no effect, and participants viewing suspect-only footage were still significantly more likely to conclude the suspect was guilty than those who saw both officer and suspect (Lassiter, *et al.*, 2002). Lassiter, *et al.* posited that effective instructions would need to inform jurors of their potential for bias as well as its direction of influence (see also Wilson and Brekke, 1994). Elek, *et al.* (2012) tested this possibility in a study in which half of participants received a thorough explanation of the camera perspective bias, its exact direction, and why it emerges ("people are unable to see the actions of the detective that the suspect is reacting to; they thus perceive the suspect as being more responsible for the situation and the information exchanged. Research has demonstrated that most people are unaware that they are affected by this bias"). When asked to consider this information when viewing the video, participants were less likely to demonstrate the camera perspective bias. Instructions that in this way allude to overweighting and underweighting prove somewhat effective in combatting the persuasive power of incomplete video evidence.

By contrast, instructions that target only overconfidence, by encouraging caution and scrutiny, have produced inconsistent effects. For example, female participants in one study who viewed digitally altered, idealized images of fashion models were less likely to experience expected body dissatisfaction when the images were coupled with warnings, either general or specific, that the images had been manipulated

(Slater, *et al.*, 2012). However, in other cases, cautions given prior to or while viewing a stimulus image have proven ineffective. In one study, some participants were shown a genuine photograph of the 2012 Olympic torch relay, others viewed the same image doctored to incorporate protestors and police in riot gear, and a third group received the doctored photo with a prominent text box in the top corner indicating "Note: This image has been Photoshopped." Participants who saw the doctored image were significantly more likely than those who saw the genuine image to remember a higher proportion of protestors and police struggling with crowd control, including when they were explicitly cautioned that the image had been manipulated (Nash, 2018). Even in the face of explicit reasons to question the accuracy of visual evidence, seen information and the confidence it engenders has a powerful impact on judgment.

Pilot study

Given mixed evidence supporting viewing instructions, we attempted to create an instruction intervention that explicitly and strongly emphasized issues of underweighting. We utilized the paradigm of Turner, *et al.* (2019), which found discrepant blame ratings of police officers in BWC versus dashcam footage. We tested whether viewing instructions that implicate underweighting by calling attention to missing information in BWC footage might eliminate these discrepancies. This is not to say that participants in Turner, *et al.'s* (2019) study who saw dashcam footage were necessarily more accurate in their blame ratings than those who saw BWC footage; however, they did have more available information to guide their judgments.

While we did not explicitly discuss overweighting in our instructions, it is possible that referring to information that might be missing in turn implicates the overemphasis on what is salient. Further, while we did not explicitly mention confidence in our instructions, as past instructions addressing overconfidence have generally proven ineffective, we considered whether the connection between confidence and weighting might be such that addressing underweighting could also reduce overconfidence, and we included a measure to test for this possibility.

Methods

Participants. Following Turner, *et al.'s* (2019) power analysis, we sought to collect a total sample of 300 participants across three conditions. With minor attrition, we recruited 296 U.S. residents (143 male, M_{age} = 41.42) from TurkPrime (Litman, *et al.*, 2017) in exchange for US$0.50. A handful of participants (N = 7) spent less than 44 seconds on the survey page featuring the video, suggesting that they did not watch the entire 44-second scene; these participants were removed from analyses. The following results reflect a final sample of 289 participants.

Procedure. *Stimulus videos and viewing conditions*. Participants watched one of two 44-second videos featuring a police officer approaching a stopped car, moving from the driver's side window to the front passenger window, and ultimately hitting that window with his baton repeatedly. Videos were presented with no audio, so as to isolate the effect of visual perspective and instructions. One version of the video, shown to participants in the *dashcam condition* (N = 97), was taken from the dashboard camera inside the police officer's cruiser and showed the whole scene including the officer and the civilian's car. Participants in the *bodycam condition* (N = 95), watched footage of the same event taken from the officer's BWC, displaying only the perspective of the car from the officer's chest (see Turner, *et al.*, 2019) [5]. Neither scene showed the civilian(s) inside the vehicle due to tinted windows; however, the car could be seen stopped at a streetlight, clearly suggesting the presence of civilians inside.

Finally, participants in a third bodycam instructions condition (N = 97) also watched the BWC footage after first receiving the following viewing instructions: "When watching the video make sure to consider what information might be outside of the frame of the camera and therefore not depicted on the tape." Though instructions that indicate magnitude and direction of potential bias have proven particularly effective in the

past (*e.g.*, Elek, *et al.*, 2012), those instructions may have largely worked due to demand characteristics — participants responding how they think the researchers expect and desire. Thus, our instructions were more minimal but still contained more information than past failed interventions (*e.g.*, "your judgments could be affected by the angle of the camera") by highlighting missing information and implicating underweighting.

Dependent measure. Replicating wording used in Turner, *et al.* (2019, Study 1) we asked participants: "How much blame does the officer deserve for breaking the car window?" (1 = *none at all*, 7 = *a great deal*).

To test participants' introspection about their viewing experience, we asked them to consider: "In evaluating the actions in this video, to what extent were you focused on the officer's perspective and motivations?" (1 = *not at all*, 7 = *completely*). They next also considered "To what extent were you focused on the civilian's perspective and motivations?" (1 = *not at all*, 7 = *completely*). Asking about their focus on both targets, even though the civilian was never visually depicted, allowed a complete examination of participants' metacognitive experiences and the degree to which they were aware of how camera perspective might impact them. Finally, as a measure of confidence, we asked participants to consider to what extent they agreed that they "had sufficient information to evaluate the officer's actions in this scene" (1 = *strongly disagree*, 7 = *strongly agree*).

Police identification. To test impacts of perceiver characteristics, in particular the potential moderating effect of group identification, participants indicated their level of identification with police using a 7-item scale (Granot, *et al.*, 2014), indicating agreement with sample items such as "If you talked to most police officers, you think you would find that they have similar views to your own on many issues" (1 = *strongly disagree*, 7 = *strongly agree*) ($M = 4.65$, $SD = 1.35$).

Results

To test the effect of viewing condition on evaluations of blame, we ran a one-way analysis of variance (ANOVA) (condition: *dashcam, bodycam, bodycam instructions*). There was a significant effect of viewing condition on blame judgments, $F(2,286) = 3.70$, $p = .03$, $\eta^2_p = .03$. We replicated the findings of Turner, *et al.* (2019) in that participants viewing BWC footage were significantly less likely to believe the officer was to blame for his actions ($M = 4.04$, $SD = 2.20$, 95% CIs: 3.61,4.47) than participants who watched the same scene from a dashboard camera perspective ($M = 4.88$, $SD = 2.10$, 95% CIs: 4.45,5.30), $t(286) = 2.74$, $p = .007$. Blame ratings of participants who watched the BWC footage coupled with instructions to consider nondepicted or missing information fell in between the other two conditions ($M = 4.48$, $SD = 2.08$, 95% CIs: 4.06,4.91). People who received these supplementary instructions did not blame significantly more than those who watched the same BWC footage without instructions, $t(286) = 1.43$, $p = .15$. However, the instructions also led to blame ratings that did not significantly differ from participants who received the more expanded dashcam footage, $t(286) = 1.31$, $p = .19$ (see Figure 1). These results suggest that instructions that combat underweighting, by encouraging viewers to think about the limitations of visual evidence, may, to some degree, mitigate the influence of narrowed camera perspective on judgments.

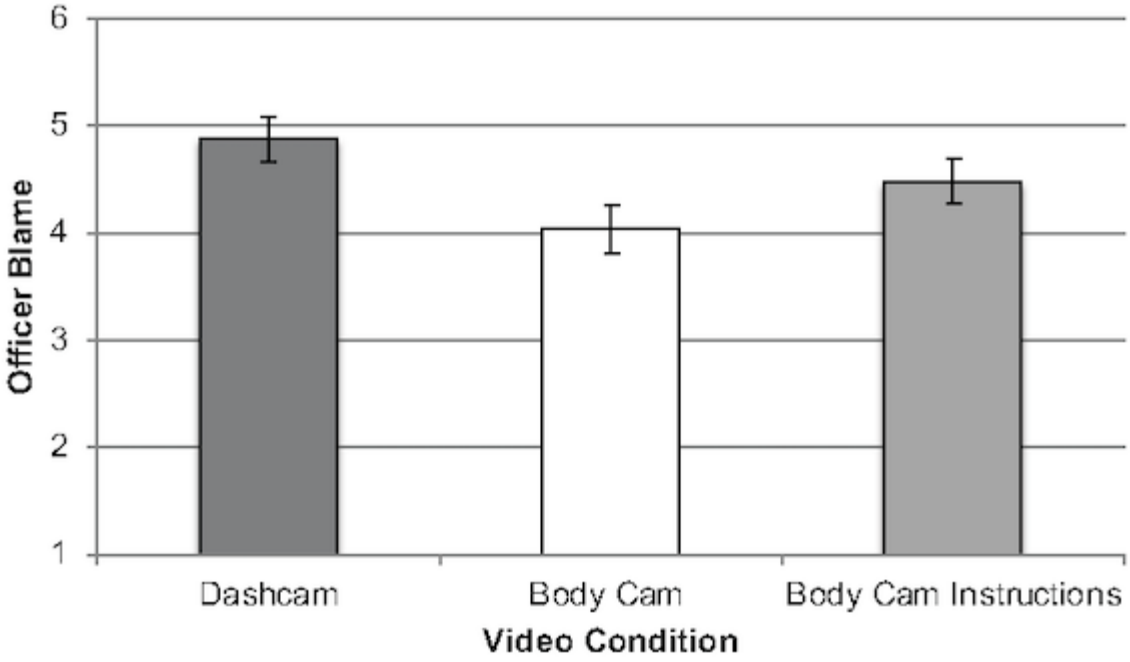

Figure 1: Effects of viewing condition on evaluations of officer blame. Bars reflect standard errors.

Further, we explored whether, as in some previous studies (*e.g.*, Turner, *et al.*, 2019), effects of viewing condition (a potential proxy for attention) on blame were moderated by identification with police. We ran a regression predicting blame from dummy-coded viewing condition, mean-centered police identification, and the interactions between identification and the dummy-coded video conditions. A main effect of police identification emerged such that more highly police-identified participants were less likely to blame the officer regardless of condition. However, no interactions emerged $p > .51$, such that police identification did not moderate any differences between viewing conditions.

To test the degree to which participants were aware of the potential influences of viewing condition on their evaluations, we ran a one-way ANOVA (condition: *dashcam, bodycam, bodycam instructions*) predicting the degree to which participants believed they had focused on the police officer's perspective and motivations. No effect of viewing condition emerged, $F(2,286) = .20$, $p = .82$, $\eta^2_p = .001$. Similarly, there was no effect of viewing condition on participants' reports of the extent to which they had considered the civilian's perspective and motivations, $F(2,286) = .07$, $p = .93$, $\eta^2_p = .001$. These results suggest that participants' explicit awareness of the effects of viewing condition on their attentional focus did not meaningfully vary, regardless of whether they watched the scene from the officer's perspective or not or were tasked with considering information outside the scene.

Finally, we explored the effect of viewing condition on participants' ratings of whether they had sufficient information to evaluate the officer's actions, a proxy for confidence. Generally, at least in the absence of other sources of information including audio, BWC footage presents less contextual information than dashcam footage. Further, the instruction condition explicitly encouraged participants to consider what may have been missing or out of frame, thereby highlighting a potential dearth of information. Despite that, no significant effect of viewing condition emerged, $F(2,286) = .96$, $p = .38$, $\eta^2_p = .01$. Being told that they should consider what might not be depicted on the tape did not affect participants' confidence in the

completeness of the information they had.

Importantly, we are underpowered to statistically determine whether the nonsignificant results found in these data allow us to reject the absolute presence of an effect in the population (Shrout and Rodgers, 2018). We cannot know, for example, whether these null results suggest that there is truly no influence of viewing condition on confidence. The same caution holds for the lack of moderation by police identification. However, while previous work found that police identification interacted with relative levels of attention paid to an officer to predict officer punishment (Granot, *et al.*, 2014), here the constraints of BWC footage rendered the officer practically invisible, precluding a "low attention" condition that may be necessary for interaction effects to emerge.

Further, not only does salience of information change as a function of BWC versus dashcam footage, the actual information available changes as well, in terms of the visibility of the officer's actions. Thus, a full 2(viewing condition: BWC, dashcam) X 2(instructions: present, absent) factorial design would have allowed us to more completely test the effectiveness of the instruction interventions. However, given that the key difference between BWC and dashcam footage is the availability of information, and the instructions were aimed at alerting viewers to that problem, we think that the way instructions shifted BWC viewers' blame toward the levels reported in response to dashcam footage serves as a promising start and points to a need for further research.

This pilot study provides some support for the idea that instructions targeting underweighting, by emphasizing what the camera fails to capture, may mitigate biases induced by camera perspective or angle. Respondents who saw BWC footage coupled with intervention instructions did not differ in their evaluations of the officer, relative to those who saw footage with a broader angle, taken from a dashboard camera. However, the fact that they also did not differ in their ratings from those who saw BWC footage but received no instructions at all suggests the limited efficacy of this intervention. Judges and legal policy-makers should consider that more detailed instructional interventions are needed when presenting video evidence and that there may be some forms of evidence so compelling that instructions alone may not combat the potential prejudice they engender.

Discussion

The constraints of video evidence, coupled with basic attentional and motivational processes of perceivers, lead people to often overweight the information they see, underweight the information they might miss, and feel confident about their interpretations and decisions. Video has become an increasingly vital part of the legal process, making it urgently necessary to develop interventions to optimize jurors' consideration of such evidence. Research testing interventions in the form of instructions has produced mixed effects, often because alerting individuals to bias without information about how to combat it is insufficient.

We presented pilot data on an intervention testing instructions particularly targeting underweighting—encouraging viewers to consider information potentially missing or outside the camera frame. Results suggested these instructions bridged the gap between BWC and dashcam footage, leading to equal ratings of blame. Yet, participants' confidence that they possessed sufficient information to reach a decision was the same regardless of viewing condition or instructions. This suggests, meaningfully, that overconfidence may be the most difficult bias to shift, yet we may be able to mitigate the influence of camera perspective and engender skepticism without participants' awareness and despite their confidence.

This article cannot provide a fully exhaustive account of the way interpretations of video evidence can be biased; indeed, research is only beginning to chart the effects of video on judgment in the legal domain. We focused primarily on the way camera angle constrains or shifts salience of information, while only briefly touching on perceiver characteristics that may often determine both how people watch video as well as

moderate the impacts of attended information on judgments (see Granot, *et al.*, 2018). This lens narrowed the framework of instruction interventions we were able to test in our pilot study. For example, it is possible that instructions that directly connect perceiver characteristics to the magnitude and direction of decision bias might prove fruitful (*e.g.*, "Viewers with strong connections to X group, when watching this video, may be particularly likely to ..."). Future research may also find that instructions on how to watch evidence more holistically, designed to mute the influence of overweighting attended information, may be particularly effective (see discussion in Granot, *et al.*, 2018).

In our data, instructions to consider missing information, which should preclude underweighting of that information, seemed somewhat effective. One limitation is that neither presentation (BWC or dashcam) displayed the civilian in the scene, offering only more or less evidence of the officer approaching the vehicle. Thus, the dashcam footage is not offering information about the other target who was missing in the BWC view. This may account for why providing instructions blurs the distinction between BWCs and dashcam footage yet does not create a significant difference compared to BWC footage with no instructions. Instructions overlaid on body camera footage that more clearly depicts a civilian in the scene could potentially lead to stronger effects. However, it is because these videos do not provide different information about the civilian's actions, only more or less information about the officers actions, that this also functions as a more conservative test highlighting effects of camera angle.

When do interventions work?

Our results follow substantial work showing mixed effects of instruction interventions on bias in evaluations of video evidence. In attempting to ascertain why some instructions are effective and others not, we emphasize that simply alerting people to the possibility of bias is not enough to attenuate it (*e.g.*, Lassiter, *et al.*, 2002). Similarly, warnings meant to decrease confidence (*e.g.*, suggesting the possibility of distorted images) show mixed effectiveness (Nash, 2018; Slater, *et al.*, 2012). Thus, we suggest that interventions should target (1) overweighting what is seen—either by teaching people to take in information more holistically or by providing more information in the form of fully comprehensive, third-person videos, and (2) underweighting—encouraging people to consider what is missing, as in our pilot study (and Elek, *et al.*, 2012). Future research may explore other ways of discouraging overweighting and underweighting, and consider whether certain individual differences make some people less susceptible to these interventions than others. Further, intervention-oriented work must extend to real and relevant contexts beyond the camera perspective bias; for example, what happens to over- and underweighting when faced with truncated surveillance footage? What about when the camera catches the moments leading up to a crime, but the actors then move just out of frame? Research must keep pace with the new and varied forms of video evidence confronting legal decision-makers.

Is vision unique?

Do biases and solutions regarding video differ from analogous judgments and interventions not tied to the visual sphere? This question merits further investigation. For example, do confirmatory visual searches act differently than broader, cognitive examples of confirmation bias? No research has directly compared these processes. Yet, solutions that target weighting visual information, as we have discussed here, mimic cognitive decision-making interventions. For example, a "consider the opposite" strategy that encourages decision-makers to think about alternative information and perspectives — thereby addressing underweighting missing information — has proven to be one of the more effective interventions in combatting confirmation bias and related biases in cognitive decision-making (Lord, *et al.*, 1984). By exploring whether biases regarding video are distinct, researchers may more fully understand how to craft appropriate interventions.

Conclusion

People trust their eyes and are motivated to believe that what they see is a complete and accurate representation of critical events. Even when tasked to find facts, as jurors are, people tend to make decisions that overconfidently overweight what they see and underweight what they miss. To encourage objective appraisals and legal judgments regarding video evidence, researchers and policy-makers should target (1) overweighting, by making the most complete representation of information available, (2) underweighting, by encouraging viewers to consider what information may be missing, and (3) overconfidence, by engendering skepticism and openness to alternative information.

About the authors

Yael Granot is an Assistant Professor of Psychology at Smith College. Her research addresses how people evaluate and interact with legal actors. She uses experimental techniques, including eye tracking, to explore how the manner in which people literally watch video evidence can exaggerate bias in legal judgments. She also studies how early encounters with the police in schools may forge attitudes about justice. She received her doctorate in social psychology from New York University.
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Notes

1. Feigenson, 2014, p. 116.

2. Foley, *et al.*, 2007, p. 617.

3. Morris, 2014, p. 92.

4. Jones, *et al.*, 2019, Study 1.

5. Body camera footage can be found at https://osf.io/v3wnx/; dashcam footage can be found at https://osf.io/vfnzs/.

References

R.L. Bailey, G.L., Read, Y.H. Yan, J. Liu, D.A. Makin, and D. Willits, 2021. “Camera point-of-view exacerbates racial bias in viewers of police use of force videos,” *Journal of Communication*, volume 71, number 2, pp. 246–275.
doi: https://doi.org/10.1093/joc/jqab002, accessed 14 June 2023.

E. Balcetis, 2020. *Clearer, closer, better: How successful people see the world*. New York: Ballantine Books.

E. Balcetis, D. Dunning, and Y. Granot, 2012. “Subjective value determines initial dominance in binocular rivalry,” *Journal of Experimental Social Psychology*, volume 48, number 1, pp. 122–129.
doi: https://doi.org/10.1016/j.jesp.2011.08.009, accessed 14 June 2023.

E. Borgida and B. Howard-Pitney, 1983. “Personal involvement and the robustness of perceptual salience effects,” *Journal of Personality and Social Psychology*, volume 45, number 3, pp. 560–570.
doi: https://doi.org/10.1037/0022-3514.45.3.560, accessed 14 June 2023.

J.L. Brown-Iannuzzi, K.M. Hoffman, B.K. Payne, and S. Trawalter, 2014. “The invisible man: Interpersonal goals moderate inattentional blindness to African Americans,” *Journal of Experimental Psychology: General*, volume 143, number 1, pp. 33–37.
doi: https://doi.org/10.1037/a0031407, accessed 14 June 2023.

F.B. Colavita, R. Tomko, and D. Weisberg, 1976. “Visual prepotency and eye orientation,” *Bulletin of the Psychonomic Society*, volume 8, pp. 25–26.
doi: https://doi.org/10.3758/BF03337062, accessed 14 June 2023.

J.P. Davis and T. Valentine, 2009. “CCTV on trial: Matching video images with the defendant in the dock,” *Applied Cognitive Psychology*, volume 23, number 4, pp. 482–505.
doi: https://doi.org/10.1002/acp.1490, accessed 14 June 2023.

T. Drew, M.L.-H. Võ, and J.M. Wolfe, 2013. “The invisible gorilla strikes again: Sustained inattentional blindness in expert observers,” *Psychological Science*, volume 24, number 9, pp. 1,848–1,853.
doi: https://doi.org/10.1177/0956797613479386, accessed 14 June 2023.

J.K. Elek, L.J. Ware, and J.J. Ratcliff, 2012. “Knowing when the camera lies: Judicial instructions mitigate the camera perspective bias,” *Legal and Criminological Psychology*, volume 17, number 1, pp. 123–135.
doi: https://doi.org/10.1111/j.2044-8333.2010.02000.x, accessed 14 June 2023.

N. Feigenson, 2014. “Visual common sense,” In: A. Wagner and R. Sherwin (editors). *Law, culture, and visual studies*. Dordrecht: Springer, pp. 105–124.
doi: https://doi.org/10.1007/978-90-481-9322-6_5, accessed 14 June 2023.

N. Feigenson and C. Spiesel, 2019. “The psychology of surveillance and sousveillance video evidence,” In: C.J. Najdowski and M.C. Stevenson (editors). *Criminal juries in the 21st century: Contemporary issues, psychological science, and the law*. New York: Oxford University Press, pp. 173–193.
doi: https://doi.org/10.1093/oso/9780190658113.003.0009, accessed 14 June 2023.

M.A. Foley, H.J. Foley, R. Scheye, and A. Bonacci, 2007. “Remembering more than meets the eye: A study of memory confusions about incomplete visual information,” *Memory*, volume 15, number 6, pp. 616–633.
doi: https://doi.org/10.1080/09658210701450919, accessed 14 June 2023.

M.A. Foley, H.J. Foley, F.T. Durso, and N.K. Smith, 1997. “Investigations of closure processes: What source-monitoring judgments suggest about what is ‘closing’,” *Memory & Cognition*, volume 25, number 2, pp. 140–155.
doi: https://doi.org/10.3758/BF03201108, accessed 14 June 2023.

Y. Granot, E. Balcetis, N. Feigenson, and T. Tyler, 2018. “In the eyes of the law: Perception versus reality in appraisals of video evidence,” *Psychology, Public Policy, and Law*, volume 24, number 1, pp. 93–104.
doi: https://doi.org/10.1037/law0000137, accessed 14 June 2023.

Y. Granot, E. Balcetis, K.E. Schneider, and T.R. Tyler, 2014. “Justice is not blind: Visual attention exaggerates effects of group identification on legal punishment,” *Journal of Experimental Psychology: General*, volume 143, number 6, pp. 2,196–2,208.
doi: https://doi.org/10.1037/a0037893, accessed 14 June 2023.

H. Intraub, 2012. “Rethinking visual scene perception,” *Wiley Interdisciplinary Reviews: Cognitive Science*, volume 3, number 1, pp. 117–121.
doi: https://doi.org/10.1002/wcs.149, accessed 14 June 2023.

H. Intraub and M. Richardson, 1989. “Wide-angle memories of close-up scenes,” *Journal of Experimental Psychology: Learning, Memory, and Cognition*, volume 15, number 2, pp. 179–187.
doi: https://doi.org/10.1037/0278-7393.15.2.179, accessed 14 June 2023.

K.A. Jones, W.E. Crozier, and D. Strange, 2019. “Look there! The effect of perspective, attention, and instructions on how people understand recorded police encounters,” *Behavioral Sciences & the Law*, volume 37, number 6, pp. 711–731.
doi: https://doi.org/10.1002/bsl.2441, accessed 14 June 2023.

K.A. Jones, W.E. Crozier, and D. Strange, 2018. “Objectivity is a myth for you but not for me or police: A bias blind spot for viewing and remembering criminal events,” *Psychology, Public Policy, and Law*, volume 24, number 2, pp. 259–270.
doi: https://doi.org/10.1037/law0000168, accessed 14 June 2023.

S.M. Kassin, S.A. Drizin, T. Grisso, G.H. Gudjonsson, R.A. Leo, and A.D. Redlich, 2010. “Police-induced confessions: Risk factors and recommendations,” *Law and Human Behavior*, volume 34, number 1, pp. 3–38.
doi: https://doi.org/10.1007/s10979-009-9188-6, accessed 14 June 2023.

P. Kurtz, K.A. Shapcott, J. Kaiser, J.T. Schmiedt, and M.C. Schmid, 2017. “The influence of endogenous and exogenous spatial attention on decision confidence,” *Scientific Reports*, volume 7, article number 6431.
doi: https://doi.org/10.1038/s41598-017-06715-w, accessed 14 June 2023.

G.D. Lassiter and A.A. Irvine, 1986. “Videotaped confessions: The impact of camera point of view on judgments of coercion,” *Journal of Applied Social Psychology*, volume 16, number 3, pp. 268–276.
doi: https://doi.org/10.1111/j.1559-1816.1986.tb01139.x, accessed 14 June 2023.

G.D. Lassiter, M.J. Beers, A.L. Geers, I.M. Handley, P.J. Munhall, and P.E. Weiland, 2002. “Further evidence of a robust point-of-view bias in videotaped confessions,” *Current Psychology*, volume 21, number 3, pp. 265–288.
doi: https://doi.org/10.1007/s12144-002-1018-7, accessed 14 June 2023.

L. Litman, J. Robinson, and T. Abberbock, 2017. “TurkPrime.com: A versatile crowdsourcing data acquisition platform for the behavioral sciences,” *Behavior Research Methods*, volume 49, number 2, pp. 433–442.
doi: https://doi.org/10.3758/s13428-016-0727-z, accessed 14 June 2023.

C. Lord, M. Lepper, and E. Preston, 1984. “Considering the opposite: A corrective strategy for social judgment,” *Journal of Personality and Social Psychology*, volume 47, number 6, 1,231–1,243.
doi: https://doi.org/10.1037/0022-3514.47.6.1231, accessed 14 June 2023.

H. McGurk and J.W. MacDonald, 1976. Hearing lips and seeing voices, *Nature*, volume 264, number 5588 (23 December), pp. 746–748.
doi: https://doi.org/10.1038/264746a0, accessed 14 June 2023.

J.L. Mnookin, 1998. “The image of truth: Photographic evidence and the power of analogy,” *Yale Journal of Law & the Humanities*, volume 10, number 1, pp. 1–74, and at https://openyls.law.yale.edu/handle/20.500.13051/7250, accessed 14 June 2023.

E. Morris, 2014. *Believing is seeing: Observations on the mysteries of photography*. New York: Penguin.

R.A. Nash, 2018. “Changing beliefs about past public events with believable and unbelievable doctored photographs,” *Memory*, volume 26, number 4, pp. 439–450.
doi: https://doi.org/10.1080/09658211.2017.1364393, accessed 14 June 2023.

E. Pronin, D.Y. Lin, and L. Ross, 2002. “The bias blind spot: Perceptions of bias in self versus others,” *Personality and Social Psychology Bulletin*, volume 28, number 3, pp. 369–381.
doi: https://doi.org/10.1177/0146167202286008, accessed 14 June 2023.

J. Qu-Lee, B. Seidel, D. Harel, T. Granot, and E. Balcetis, 2022. “The relationship between visual confirmation, belief consistency, and belief polarization,” *Comprehensive Results in Social Psychology*, volume 6, numbers 1–3, pp. 1–38.
doi: https://doi.org/10.1080/23743603.2022.2026214, accessed 14 June 2023.

J. Rajsic, D.E. Wilson, and J. Pratt, 2015. “Confirmation bias in visual search,” *Journal of Experimental Psychology: Human Perception and Performance*, volume 41, number 5, pp. 1,353–1,364.
doi: https://doi.org/10.1037/xhp0000090, accessed 14 June 2023.

S. Ristovska, 2020. “The need for visual information policy,” *Surveillance & Society*, volume 18, number 3, pp. 418–421.
doi: https://doi.org/10.24908/ss.v18i3.14153, accessed 14 June 2023.

I. Rock and J. Victor. 1964. “Vision and touch: An experimentally created conflict between the two senses,” *Science*, volume 143, number 3606 (7 February), pp. 594–596.
doi: https://doi.org/10.1126/science.143.3606.5, accessed 14 June 2023.

L. Ross and A. Ward, 1996. “Naïve realism in everyday life: Implications for social conflict and misunderstanding,” In: E.S. Reed, E. Turiel, and T. Brown (editors). *Values and knowledge*. Mahwah, N.J.: Erlbaum Associates, pp. 103–135.

P.E. Shrout and J.L. Rodgers, 2018. “Psychology, science, and knowledge construction: Broadening perspectives from the replication crisis,” *Annual Review of Psychology*, volume 69, pp. 487–510.
doi: https://doi.org/10.1146/annurev-psych-122216-011845, accessed 14 June 2023.

D.J. Simons and C.F. Chabris, 1999. “Gorillas in our midst: Sustained inattentional blindness for dynamic events,” *Perception*, volume 28, number 9, pp. 1,059–1,074.
doi: https://doi.org/10.1068/p281, accessed 14 June 2023.

A. Slater, M. Tiggemann, B. Firth, and K. Hawkins, 2012. “Reality check: An experimental investigation of the addition of warning labels to fashion magazine images on women’s mood and body dissatisfaction,” *Journal of Social and Clinical Psychology*, volume 31, number 2, pp. 105–122.
doi: https://doi.org/10.1521/jscp.2012.31.2.105, accessed 14 June 2023.

R. Sommers, 2015. “Will putting cameras on police reduce polarization?” *Yale Law Journal*, volume 125, number 5, pp. 1,334–1,362, and at https://www.yalelawjournal.org/note/will-putting-cameras-on-police-reduce-polarization, accessed 14 June 2023.

A. Sternisko, Y. Granot, and E. Balcetis, 2017. “One-sighted: How visual attention biases legal decision-making,” In: D. Delagarza (editor). *New developments in visual attention research*. Hauppauge, N.Y.: Nova Science Publishers, pp. 105–139.

S.E. Taylor and S.T. Fiske, 1975. “Point of view and perceptions of causality,” *Journal of Personality and Social Psychology*, volume 32, number 3, pp. 439–445.
doi: https://doi.org/10.1037/h0077095, accessed 14 June 2023.

B.L. Turner, E.M. Caruso, M.A. Dilich, and N.J. Roese, 2019. “Body camera footage leads to lower judgments of intent than dash camera footage,” *Proceedings of the National Academy of Sciences*, volume 116, number 4 (7 January), pp. 1,201–1,206.
doi: https://doi.org/10.1073/pnas.1805928116, accessed 14 June 2023.

S.C. Walenchok, S.D. Goldinger, and M.C. Hout, 2020. “The confirmation and prevalence biases in visual search reflect separate underlying processes,” *Journal of Experimental Psychology: Human Perception and Performance*, volume 46, number 3, pp. 274–291.
doi: https://doi.org/10.1037/xhp0000714, accessed 14 June 2023.

L.J. Ware, G.D. Lassiter, S.M. Patterson, and M.R. Ransom, 2008. “Camera perspective bias in videotaped confessions: Evidence that visual attention is a mediator,” *Journal of Experimental Psychology: Applied*, volume 14, number 2, pp. 192–200.
doi: https://doi.org/10.1037/1076-898X.14.2.192, accessed 14 June 2023.

T.D. Wilson and N. Brekke, 1994. “Mental contamination and mental correction: Unwanted influences on judgments and evaluations,” *Psychological Bulletin*, volume 116, number 1, pp. 117–142.
doi: https://doi.org/10.1037/0033-2909.116.1.117, accessed 14 June 2023.

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