Memory Outcomes of Police Officers Viewing Their Body-Worn Camera Video

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Abstract

Does viewing the Body-Worn Camera (BWC) video of an event affect participating officers' memory for the event and their state of mind therein? In two pre-registered experiments, experienced police officers participated in an Officer Involved Shooting training simulator. In Experiment 1 (N=61), officers (1) participated in two scenarios, (2) answered questions about each shortly afterward, and (3) answered the same questions later after having viewed their BWC video for one event but not the other. Experiment 2 (N=64) replicated Experiment 1, comparing one versus three BWC viewings; number of repetitions had no effect. Viewing BWC video of an event introduced multiple changes in officers' event memory and memory for their state of mind during the event. Given the importance of preserving officers' memory for the original event (*Graham v. Connor*, 1989), there should be constraints on permitting officers to view their BWC video even after they complete their initial report.

Keywords: Body-Worn Camera, memory suggestibility, memory contamination, police use-of-force, Officer Involved Shooting, *Graham v. Connor*

General Audience Summary

Does viewing the Body-Worn Camera (BWC) video of their participation in an event affect officers' memory for their state of mind during the event and for the event itself? In two experiments, experienced police officers participated in an Officer Involved Shooting (OIS) training simulator. In Experiment 1 (N=61), officers (1) participated in two dynamic criminal scenarios in the simulator with each interaction recorded on their BWC, (2) responded to test items about each event shortly afterward, and then (3) responded to the same test items later after having viewed (for one scenario) or not viewed (for the other scenario) the BWC recording of their participation in the scenario. Experiment 2 (N=64) replicated Experiment 1 and assessed whether viewing multiple repetitions (view once or three times) of their BWC video differentially affected officers' memory for the original event. Viewing their BWC video of an event does affect memory (Experiment 1) but viewing the BWC multiple times (Experiment 2) had little effect on this outcome. Viewing BWC video generally increased the accuracy of memory for information about the event and increased the proportion of information in officers' reports that changed from Time 1 to Time 2 including an increase in both the amount of information initially recalled but later omitted and the amount of new information first recalled at Time 2. At some time following a use-of-force incident, it is critical for third parties to know what actually occurred during an incident, and viewing the participating officer's BWC video would be helpful in this regard. However, given the importance of preserving an officer's memory for the original event (*Graham v. Connor*, 1989), there should be constraints on permitting officers to view their BWC video even after they have completed their incident reports.

Memory Outcomes of Police Officers Viewing Their Body-Worn Camera Video

The precipitous availability of Body-Worn Cameras (BWCs) has left law enforcement

agencies struggling to adopt and incorporate this technology efficaciously.[1] The most recent

BWC report of the Bureau of Justice Statistics (BJS) (Hyland, 2018) reported that in 2016, 60%

of local police departments and 49% of sheriffs' offices had BWCs that were fully deployed.

Further, about a third of sheriffs' offices and local police departments without BWCs at the time

of the survey, indicated that they were likely to consider acquiring them within a year. Despite

the ubiquitous use of BWCs in law enforcement in the US and elsewhere, surprisingly little is

known about how BWC video should be used in the legal system. Specifically, does viewing the

BWC video of an event affect participating officers' memory for the event and their state of

mind therein?

Relevant is the US Supreme Court decision of *Graham v. Connor* (1989). This case

concerns the merits of all legal claims against law enforcement officers accused of excessive use-

of-force, such as a shooting or in-custody death, during the course of an arrest, investigatory

stop, or other "seizure" of person (*Graham v. Connor*, 1989). This 1989 case is still the

superordinate legal standard in the US for judging whether an officer's use-of-force was

justified. In its ruling, the court concluded that a test criterion of "reasonableness" must be used

when assessing the actions of law enforcement officers in these situations. This "reasonableness"

criterion was defined as being "judged from the perspective of a reasonable officer on the scene,

rather than with the 20/20 vision of hindsight" (*Graham v. Connor*, 1989).[2] If an officer's event

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[1] For a review of the psychological research on the use of Body-Worn Cameras, see Pezdek (in press).

[2] While the Federal "reasonableness standard" established by *Graham* is the minimum protection guaranteed, states may impose a higher standard.

memory and memory for their state of mind at the time of the event is used to determine "reasonableness," then it is important to ensure that these memories are preserved and not distorted or contaminated.

This study investigates whether viewing the BWC video of an event alters an officer's event memory and memory for their state of mind during a use-of-force incident. Justification for an officer's use-of-force is typically assessed based on the officer's account of the event, both their initial account shortly after an event and subsequent accounts some time later as well. Where BWC footage is available, the subsequent accounts of an officer might be rendered before or after they have viewed their BWC video. This study assesses differences between officers' initial account of an incident and their subsequent account of the incident as a function of whether they view their BWC footage after their initial account. We recognize that initial recall can serve to strengthen subsequent memory (Hope et al., 2013). However, we adopted the design utilized because in real use-of- force incidents, especially Officer Involved Shootings (OIS) as we are dealing with in this simulation study, officers are typically asked to report multiple times about an incident. We wanted to assess if viewing their BWC footage is likely to introduce changes in what officers report from their initial recall opportunity to a subsequent recall opportunity. If it is critical to assess officers' event memory and their state of mind at the time of an event, then it is important to safeguard that these memories are not distorted (Pezdek, 2015). Policies regarding whether officers can view their BWC video prior to completing their report are highly inconsistent across US police departments. The 2016 BJP report cited above reported that 60% of general-purpose law enforcement agencies with BWCs allowed officers direct access to their BWC recordings without even having to file a formal request. *The New Yorker* listed this issue in "The Top Five Legal Stories of 2016" (Toobin, 2015).

Why question the accuracy of a police officer's memory for a use-of-force incident in which they were an active participant? Within the field of eyewitness memory, it is well known that memory is an imperfect, schema-driven process. Holst and Pezdek (1992) reported that in a mock trial setting, people "remembered" script consistent details of a robbery even if these details had not been presented. Similar results were reported by Hope et al. (2016); after viewing a simulated scenario, almost 20% of police officers falsely reported that the target was pointing a gun in their direction. Also see similar results reported by Greenberg et al. (1998). It might be argued that this effect is less likely to occur when people actively participate in an event than when they simply witness a video of it. However, Hope et al. (2016) reported that officers who participated in the scenario reported fewer correct details about the critical phase of the scenario than those who simply observed it. Similar results with measures of memory accuracy were reported by Ihlebæk et al. (2003) and Kassin (1984).

The extensive cognitive science research on post-event suggestion is central to the issue of whether officers should be permitted to view their BWC footage. It is now well established that memory can be suggestively influenced by post-event information (Loftus, 1975; Pezdek, 1977), and viewing BWC footage is a type of post-event information. Although the BWC recording of an event contains true information, it is also likely to include information that the officer may not have attended to or remembered from the original event. After all, the perspective of the officer is not necessarily the same as the perspective of the BWC on the officer's chest. In light of the research on post-event suggestion, viewing the BWC footage of an event would be expected to suggestively influence officers' memory for the original event, introducing new information not initially observed and altering memory for information that was initially observed. In fact, Adams et al (2020) had college students participate in a simulated

theft in virtual reality. One week later, half of the participants viewed their BWC recording of the event prior to a final free recall task. Consistent with research on post-event suggestion, reviewing the BWC footage enhanced the completeness and accuracy of the information recalled with memory conforming more to the information in the BWC recording.

Under what conditions is post-event information more likely to influence event memory? First, stronger memories are more resistant to suggestibility than weaker memories, an effect known as the memory trace strength theory of suggestibility (Pezdek & Blandón-Gitlin, 2005; Pezdek & Roe, 1995). Based on this research, it is predicted that the extent to which officers' memories will be vulnerable to the suggestive influence of viewing BWC video will be related to the relative strength of memory for the original event versus the BWC recording of this event.

In addition, memory is more likely to be suggestively influenced by post-event information when the content of the original and the post-event target items is highly similar (see for example, Geraci & Franklin, 2004; Hannigan & Reinitz, 2003; Lindsay et al., 2004). This factor is relevant to the potential influence of viewing BWC video on memory for an original event because (a) the similarity between the thematic content of the original event and the BWC video is high and (b) memory for one's state of mind during a highly stressful event such as a use-of-force incident is likely to be weak. (For a review of the research on stress and memory, see Marr et al., 2021 and Wolf, 2009.)

It is important to note that this study is not about identifying the procedures that should be followed to ensure that an officer's account of an event is the "most accurate" in terms of best matching the BWC video. This study is about determining whether an officer's account of an incident changes from their initial report to a subsequent report as a function of viewing their BWC video of the event, thus reflecting a change in their memory for what was their "original

perspective" (*Graham v. Connor*). But this issue is often misunderstood. In a recent review of potential "benefits" of BWCs, Blaskovits and Bennell (2020) proposed several factors that suggest that officers' memory could actually be enhanced by viewing their BWC video prior to writing their reports. However, none of this work is sensitive to minimizing the contamination of an officer's "original perspective," a critical aspect in judging whether officers' use-of-force was justified. In fact, Blaskovits and Bennell stated, "If viewing BWC footage can enhance an officer's memory for a UoF encounter, this may assist the officer in a variety of contexts (e.g. preparing their report about the encounter…)" (p. 251), a view contrary to the position based on *Graham v. Connor.*

Our study includes two OSF pre-registered experiments with experienced police officers at a police training facility using an Officer Involved Shooting (OIS) training simulator. This training simulator uses life-size projections of simulated crimes and engagement with realistic but fake weapons. In Experiment 1, officers (1) participated in two scenarios involving domestic violence with each interaction recorded on their BWC, (2) answered 14 test items about each scenario at Time 1, shortly afterward, and (3) answered the same 14 test items at Time 2 after having viewed the BWC recording of their participation in one scenario but not the other. The critical question is whether viewing the BWC video of their participation in each scenario alters officers' event memory and memory for their state of mind during the event. Experiment 2 replicated Experiment 1 and assessed whether viewing multiple repetitions of their BWC video further affected officers' memory for the initial interaction.

Method, Experiments 1 and 2

The methodology was similar for Experiments 1 and 2 and will thus be presented together here.

Participants and Design

All participants were active members of one police department in Southern California. As part of their annual training, all officers in this department are required to attend training sessions at the department's training facility; those who participated in this study did so as part of that training.[3] Each officer was in only one of the two experiments. A total of 73 police officers participated in Experiment 1; 72 police officers participated in Experiment 2. Following the methods proposed by Faul et al. (2007), we used G*Power to conduct a power analysis for the main effect of viewing condition in a repeated measures ANOVA with the following parameters: Power = .85, α = .05, a conservative (small to medium) effect size (Cohen's f) = .20. The study was powered for the main effect of Viewing Condition and not for the interaction of Viewing Condition x Time of Test because, as reported below, analyses of the open-ended test items did not include an interaction term. Thus, although analyses of all test items included a potential main effect of Viewing Condition, not all test items included a potential interaction term. Although the study was powered for the main effect of viewing condition (Experiment 1) and number of repetitions (Experiment 2), where there are potential interactions, they are examined as exploratory analyses. The sample size specified was N = 52 for a total of N = 104 in both experiments. However, we ran a total of 145 participants anticipating that some participants would not satisfy the preregistered inclusion and exclusion criteria. Although our access to active-duty police officers was limited to those in this one large police department, in fact, almost all officers in this police department did participate; it was part of their required annual training.

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[3] In this police department, the policy is that in Officer Involved Shootings, officers can view their BWC footage prior to writing their incident report.

After applying the OSF preregistered exclusion criteria, 61 participants remained in

Experiment 1 and 64 in Experiment 2.[4] The demographic variables that describe the sample for

this study are presented in Table 1. Experiment 1 is a 2 [Time of Test: Time 1 (shortly after the

event), and Time 2 (shortly after the post-event condition)] x 2 (Post-Event Viewing Condition:

BWC video viewed or not) within-subjects design. Experiment 2 is a 2 (Time of Test: Time 1

and Time 2) x 2 (BWC Repetitions: BWC video viewed once or 3 times) within-subjects design.

Note that both factors were manipulated within-subjects in both Experiments. There were several

divergences from the pre-registered information.[5]

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[4] A participant's data was excluded from the analyses using list-wise deletion if any of the following OSF preregistered exclusion criteria were met, with the size of the excluded samples reported here for both experiments together: (a) participants with incomplete data, (N = 0), (b) participants failed to complete either target event segment (e.g., they "died" during simulation play) so they did not see the full event that the test questions probed (N = 0), and (c) participants who had technical problems during participation and could not complete the experiment, (N = 9). Additionally, outliers more than 2 standard deviations from the mean for the state of mind and event memory questions were removed (N = 11).

[5] In the interest of complete transparency, we mention here all pre-registration divergences:

- The Power analysis reported here differs from what was preregistered on OSF. This is first, because we made an error in G*Power in our preregistered calculations and did not realize this until the data were already collected; this was after the start of the pandemic when further data collection was not possible. Also, dropping the Time 3 data (see bullet point below) changed the Power calculation. Finally, as described above, we realized that it was more appropriate to power the study for the main effect of viewing condition (in Experiment 1) and the main effect of repetitions (in Experiment 2). Consequently, we changed the specification of Power to .85 and the effect size to Cohen's $f = .20$, thus ensuring that the sample still met the requirements for the analyses that we conducted.
- We eliminated the Time 3 condition specified in the original study due to substantial missing data; few officers completed the third session of data collection. Consequently, analyses were conducted without Time 3 data.
- We acknowledge that with multiple test items in each experiment and separate analyses on each item, as initially pre-registered, there was the risk of inflating the probability of Type I error. We consequently altered the analyses and conducted MANOVAs as the primary analyses with ANOVAs or t-tests conducted as post hoc analyses.

Description of Scenarios

Each officer participated in the same two scenarios in the simulator. Each scenario lasted about one minute, with some variability depending on the action taken by the officer at the end of the scenario. The scenarios were professionally prepared live-action videos that were made to accompany the shooting simulator. Both actors in each scenario were Caucasian. Each scenario was projected life size on a screen in the simulation room. Across officers, the assignment of each scenario to one of the two experimental conditions was counterbalanced and arranged so that each scenario was approximately equally often ordered first or second.

In the *domestic dispute in the home scenario*, the dispatch call described a residential area where a couple reportedly had a physical altercation earlier but it has now deescalated to just a verbal argument. The simulation began inside the residence; a frightened woman emerges who informs the officer that the male just got out of jail, has been drinking and has a gun. About 2 s later, the inebriated male walks into the room, holding a wine bottle. He begins waving the bottle around, apologizing and saying, "everything is okay." The male then leaves the room and is no longer visible for a few seconds. He reappears with one hand behind his back and begins yelling, "I am not going back to jail, man!" as he pulls out a gun and attempts to shoot the officer. At this

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- A pre-registered factor analysis of the event memory questions was not conducted because after reorganizing the data analyses as detailed above, this analysis was not deemed appropriate.
- With the post hoc analyses on individual test items, alpha was reduced from .05 to .01 to account for and reduce the risk of Type I error. The alpha level in the Power analyses remained .05 as pre-registered.
- Outliers were removed at 2 SDs from the mean rather than 2.5 SDs because 2.5 SDs resulted in the elimination of too many participants and our access to additional police officers was curtailed by the pandemic. The participants deleted were done so list-wise.

point, the officer could either (a) shoot the male, or (b) be shot by the male. The scenario then ended.

In the *domestic dispute in the parking lot scenario*, the dispatch call described the officer sitting in a parking lot of a grocery store when a citizen informs them of a couple in a heated argument that may become physical. The simulation begins with a couple arguing about the male being late to pick up their child. The argument continues for about 28 s, with the couple ignoring the officer. When the male notices the officer, he walks towards him and shouts, "this is none of your business!" While the male is shouting, the female reaches into her car and emerges holding a swaddled infant. The male then walks back to the female, and the argument continues. The male then reaches out for the child, and the woman pulls the baby away. They both struggle over the baby for a few seconds until the female, holding the baby, reaches behind her back and pulls out a gun. The male immediately retreats with his hands in the air while the female continues to brandish the gun for a few seconds. The female shoots the male and then immediately turns and points the gun at the officer. At this point, the officer could either (a) shoot the female, or (b) be shot by the female. The scenario then ended.

Procedure

Both experiments were conducted at the same police department training facility. Officers participated one at a time on the training simulator. The simulator used was Ti Training's RECON Core. This system is keyboard and mouse-controlled and functioned on a Windows computer. A high-definition projector displayed the scenarios on a 12' x 6'11" screen; a 5.1 surround sound speaker system provided the audio. All scenarios in the Ti Training system library had a set of branching options. These options allowed the researcher to select the perpetrator's next move; for example, the perpetrator could either use their gun on the officer or

surrender. In this study, the researcher always chose the "Gun Attack" branch option ensuring

that the perpetrator always pulled out their gun. The simulator also recorded what weapon or

equipment was used by each officer and how many times the weapon was used (e.g., shots fired,

taser rounds, etc.). Although the scenarios took place on a two-dimensional screen, the simulator

had a shot detection system that allowed officers to move freely around the training room and

still have their weapons registered by the system.

Before entering the simulation room, each officer read and signed the consent form. Once

each officer entered the simulation room, they were given a brief description of the simulation

room and were told what they should expect to transpire. The researcher emphasized that

throughout, the officer needed to speak and behave as if each dispatch call was real. With this in

mind, they were not specifically told that their memory for each scenario would be tested

afterward. Next, they were fitted with a vest on which a BWC was mounted. The Axon BWC

was the same type they wore in their regular police assignments. The vest ensured that the BWC

was positioned similarly on all officers. The researcher then directed the officer to their

simulation equipment: gun, taser, pepper spray, and safety glasses, and instructed them to place

the equipment on their person as they would with their real equipment. The researcher next

tested that the simulator software was properly registering the equipment.

Officers were then instructed to stand at the starting point, a blue arrow on the floor, but

were told that they could freely move around the room once the simulation began. To increase

the level of arousal and encourage active engagement in the simulation, the officers were told

that the shoot-back system was activated. The shoot-back system is an airsoft gun that shoots BB

gun bullets controlled by the simulator to imitate a shooting gun. Although officers were told that

the shoot-back system may go off during their participation, in fact, it never did. Throughout the

simulation, the researcher stayed in the back of the simulation room behind a plexiglass screen.

A schematic representation of the procedure for both experiments is presented in Figure

1. Each officer participated in two scenarios sequentially presented in the simulator. They were

told that they would be responding to each scenario alone, without a partner. Before the first

scenario, the researcher instructed officers to start their BWC and then double-check to confirm

the BWC had started. After the first scenario, the officer was instructed to reset their standing

position to the blue arrow. The second scenario followed shortly thereafter. At the end of the

second scenario, the officer was escorted to an adjacent test room where they responded to test

items in a Qualtrics survey format on a laptop computer. The 14 test items about the first

scenario were presented first; the 14 test items about the second scenario were presented second.

All test items were presented in the Time 1 test shortly after entering the test room. The time

delay between participating in each scenario and being presented with the Time 1 Test for the

corresponding scenario was approximately 10 min.

The post-test BWC viewing condition occurred after the Time 1 test. In Experiment 1,

each officer was assigned to view their BWC recording of one of the two scenarios with the

other scenario assigned to the no BWC viewing control condition. In Experiment 2, each officer

was assigned to view their BWC recording of one of the two scenarios one time; the other

scenario was viewed three times, one after the other. Prior to the post-test BWC viewing

condition, the officers were simply instructed, "You are going to watch your Body-Worn Camera

video from one of the simulations you participated in. Please put on these headphones, and I will

start the video." After the post-test BWC viewing condition, the officers participated in the Time

2 test, which was a replication of the Time 1 Test. For each scenario, the time delay between the

corresponding Test 1 and Test 2 was approximately 10 min for Experiment 1 and 15 min for

Experiment 2. Following the Time 2 test, officers responded to a sequence of demographic

questions; the mean responses to these demographic questions are in Table 1.

Test Items

At each of the two test times, officers responded on a laptop computer to 14 test items

regarding each scenario. The same 14 test items were responded to at Time 1 and Time 2. These

14 test items were developed to represent four aspects of officer's memory, and they were

analyzed separately on this basis. The following four categories of test items were included: (a)

five event memory test items coded for accuracy, (b) three event memory test items coded for the

proportion of response change from Time 1 to Time 2, (c) six Likert scale test items about

officers' state of mind, and (d) two open-ended test items about officers' state of mind. The 14

test items, classified into the four categories, are presented in the Appendix.

We measured event memory separately from state of mind because although event

memory is important, *Graham v. Connor* (1989) specifically referred to the "perspective of a

reasonable officer on the scene" in judging whether an officer's use-of-force was justified. Our

state of mind test items were designed to capture this "perspective." Also, the Likert scale test

items about officers' state of mind were considered separately from the open-ended test items

about officers' state of mind because these two test item types assessed different aspects of state

of mind and were coded differently.

Data Coding

Coding Responses to Event Memory Test Items for Accuracy. Five event memory test

items (items 1 – 5 as presented in the Appendix) were coded for accuracy by comparing each

participant's response to what actually occurred in their BWC recording of each incident. Two

experimenters independently coded what occurred in each officer's BWC recording of each incident, and each officer's responses were compared to what had transpired in the incidents that they had participated in. Each response to these 5 test items received a binary code, accurate (1) or inaccurate (0). These results are reported as the mean proportion correct across subjects for each test item. A response was considered accurate if the reported detail occurred within 3 s of when that detail occurred in the scenario. For example, if a participant reported drawing their gun "when the female opened the car door," and the coders identified an accurate response from the scenario to be, "Female opens car door," then that response would receive a code of "1." Alternatively, in response to this same test item, if a participant reported drawing their gun "when the female closed the car door," because this event occurred more than 3 s later, this response would have received a code of "0." When responses included more than one detail, only the first detail mentioned was coded for accuracy. The complete coding procedure and codebook are detailed with the supplementary materials available on the OSF site for each experiment.[6] Responses to event memory test item 6 could not be coded for accuracy because for one of the scenarios, it was not clear to the participants exactly where the gun was at the beginning of the scenario.[7] Responses to this test item were coded for proportion of details omitted or committed from Time 1 to Time 2.

Coding Responses to Open-Ended Test Items for Proportion of Details Omitted or Committed. Three of the event memory test items (items 1, 2, and 6 as presented in the

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[6] The supplementary materials can be accessed on the OSF site for each experiment:
https://osf.io/fg6h8/?view_only=cfeeffd1d6964646b7fa57536774b95c (Exp. 1)
https://osf.io/cvwjr/?view_only=45576668e7f34e6183a6fedbde195f69 (Exp. 2)

[7] Responses to event memory test item 6 could not be coded for accuracy because for one of the scenarios, it was not clear to participants exactly where the gun was at the beginning of the scenario.

Appendix) and two state of mind test items (items 13, and 14) were coded for proportion of

details omitted or committed from Time 1 to Time 2. The other test items were typically

responded to with short answers that could be coded for accuracy, but there was insufficient

detail to code for omissions and commissions. Each officer's open-ended response to each of

these test items was coded by two experimenters for consistency from Time 1 to Time 2.

Specifically, relative to each officer's Time 1 response to each test item, we computed the

proportion of commissions and the proportion of omissions in their recall data.[8] Commissions

occurred when new information was later reported that had not been reported at Time 1.

Omissions occurred when information reported at Time 1 was not later reported. For percentage

of commissions, the numerator was the total number of coded responses by the coders at Time 2

but not included at Time 1; the denominator was the total number of coded responses identified

by the coders at Time 2. For percentage of omissions, the numerator was the total codes included

at Time 1 but not included at Time 2; the denominator was the total codes included at Time 1.

The agreement on items for all open-ended test items averaged across all participants, for both

experiments, for both scenarios qualified as substantial (Experiment 1 percent agreement = 76%;

Experiment 2 percent agreement = 77%; Landis & Koch, 1977). We used a strict criterion for

agreement; the two coders were considered in agreement only if both identified the same exact

details for each participant response. This is notable given that the number of details that a

participant could have in their response ranged from one to eight. Additionally, as can be seen in

the codebook, the number of details that could be coded for each scenario was more than 50. For

example, if a participant reported that they had drawn their gun "when the female told me her

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[8] Similar analytic methods for coding open-ended responses have been used, for example, by
Bauer, Tasdemir-Ozdes, and Larkina (2014).

boyfriend had a gun, was just released from prison, and had already been violent towards her"

then both coders were expected to respond with the relevant codes from the codebook: "5, 10,

23, 25." Only if both coders responded with those exact codes would the agreement score have

been 100% for that response; if even one of those codes was left out, the agreement would have

been 0%.

To ensure that the agreement for both accuracy and proportion of details committed and

omitted was reliable, the coders discussed disagreements between their coding in a consensus

meeting after having independently coded the data. After these disagreements were discussed,

each coder went back and independently recoded every response again. The coders then had a

final consensus meeting to ensure agreement was sufficient and resolved any remaining

disagreements in codes together to finalize the data.

Experiment 1

Results and Discussion

As indicated above, the 14 test items were developed to represent four aspects of

officer's memory, and they were analyzed separately on this basis. These four test item

categories were: (a) five event memory test items coded for accuracy, (b) three event memory

test items coded for the proportion of response change from Time 1 to Time 2, (c) six Likert

scale test items about officers' state of mind, and (d) two open-ended test items about officers'

state of mind coded for the proportion of response change from Time 1 to Time 2.

We acknowledge that with analyses of multiple test items in each experiment, there is the

risk of inflating the probability of Type I error. The principal analyses were thus four separate

Multivariate Analyses of Variance (MANOVAs), one performed on each of the four categories

of test items specified above. These 4 MANOVAs are reported below. Following the

MANOVAs, we conducted ANOVAs on responses to individual test items as post-hoc analyses

to shed light on the more specific bases of the significant MANOVA results. Analyses of

responses to individual test items were each conducted using α = .01, a more conservative α

level. The statistical results for all significant and nonsignificant effects for all test items in both

experiments are included with the supplementary materials on the OSF site for each experiment.

At the OSF site for each experiment we have also posted the descriptive statistics that correspond

to all conditions.[9]

The Five Event Memory Test Items Coded for Accuracy

Five event memory test items were coded for accuracy (see Appendix for test items 1 –

5). Reponses to the five event memory test items coded for accuracy were first analyzed with a 2

(Time of Test) x 2 (Post-Event Viewing Condition: BWC video viewed or not) MANOVA. The

MANOVA revealed a significant main effect of Time of Test, $F(5,56) = 6.82$, $p < .001$, Pillai's

Trace = 0.379, $\eta_p^2 = .38$; averaged across the five event memory test items, responses were more

accurate at Time 2 than at Time 1. The interaction was also significant, $F(5,56) = 3.96$, $p = .004$;

Pillai's Trace = 0.261, $\eta_p^2 = .26$. The improvement in response accuracy from Time 1 to Time 2

was greater when officers had viewed their BWC footage than when they had not. However, it is

important to note that officers' more accurate responses at Time 2 were likely derived from

viewing their BWC video and not from their original memory of the event.

We next conducted ANOVAs as post-hoc analyses to shed light on the more specific

bases of these MANOVA results. Separate 2 (Time of Test) x 2 (Post-Event Viewing Condition)

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[9] All statistical results can be accessed with the supplementary materials on the OSF site for each experiment:
https://osf.io/fg6h8/?view_only=cfeeffd1d6964646b7fa57536774b95c (Exp. 1)
https://osf.io/cvwjr/?view_only=45576668e7f34e6183a6fedbde195f69 (Exp. 2)

ANOVAs were performed on responses to each of the five event memory test items coded for accuracy. These analyses are presented below.

1. *At what point did you first draw your gun?*

A Time of Test x Post-Event Viewing Condition ANOVA was performed on the mean proportion correct to this test item. The outcome for the interaction was, $F(1,60) = 5.36$, $p = .024$, $\eta_p^2 = .08$; this effect is not significant when using the conservative $\alpha = .01$ level. In the condition in which the BWC video was not viewed after answering the test item at Time 1, the response accuracy was similar at Time 1 and Time 2. However, in the condition in which the BWC video was viewed after answering the test items at Time 1, response accuracy was higher at Time 2 than at Time 1. The issue of when an officer first drew their gun is a critical one regarding the justification of their use-of-force. Although viewing the BWC video after Time 1 increased the accuracy of responses to this test item, the officers' more accurate responses were likely derived from viewing the BWC video and not from their original memory of the event.

2. *At what point did you first shoot your gun?*

A Time of Test x Post-Event Viewing Condition ANOVA was performed on the mean response accuracy to this test item. The outcome for the main effect of Time of Test in this analysis was, $F(1,60) = 4.21$, $p = .045$, $\eta_p^2 = .07$; this effect is not significant when using the conservative $\alpha = .01$ level. The direction of this effect was more accurate responses at Time 2 ($M = .98$, 95% CI [.94, 1.01]) than at Time 1 ($M = .94$, 95% CI [.88, 1.00]). Although no other effects approached significance in responses to this test item, the ceiling effect may have masked other effects.

3. *How many times did you shoot your gun?*

The mean number of shots fired by officers in the simulator was 3.41 (95% CI [3.69,

4.81]). The accuracy reporting the number of shots fired was very high; the mean difference

score between the actual number and the reported number of shots fired was only 0.09 shots

(95% CI [0.08, 0.11]). The accuracy reporting the number of shots fired was analyzed with a

Time of Test x Post-Event Viewing Condition ANOVA. No effects were significant in this

analysis; however, the near ceiling effect may have masked potential effects.

4. Which equipment did you pull out first?

The accuracy reporting the first equipment drawn was very high; the mean percentage

correct was 89%, 95% CI [81% - 97%]. The accuracy responding to this test item was analyzed

with a Time of Test x Post-Event Viewing Condition ANOVA. No effects were significant in

this analysis; however, again, the near ceiling effect may have masked potential effects.

5. What was the total duration of this event?

The total duration of each scenario was approximately 60s, with some variability

depending on the action taken by the officer at the end of the scenario. Estimates of the total

duration of each event were not very accurate. The accuracy of responses was analyzed in terms

of the difference score between the actual duration and the estimated duration, where zero

indicates an accurate time estimate and larger positive numbers reflect greater error. A Time of

Test x Post-Event Viewing Condition ANOVA was performed on these data, and all three effects

were significant at the $\alpha = .01$ level. The main effect of Time of Test was significant, $F(1, 60) =$

30.49, $p < .001$, $\eta_p^2 = .34$; estimates of duration, reported as deviations from actual duration, were

far less accurate (more exaggerated) at Time 1 ($M = 35.30$s, 95% CI [21.47s, 49.12s]) than at

Time 2 ($M = 15.85$s, 95% CI [3.84s, 27.86s]. The main effect of Viewing Condition was also

significant, $F(1, 60) = 7.17$, $p = .010$, $\eta_p^2 = .11$; estimates of duration were more accurate (less

exaggerated) when officers had viewed their BWC footage after Time 1 ($M = 21.35s$, 95% CI [8.88s, 33.83s]) than when they had not ($M = 29.80s$, 95% CI [16.99s, 42.60s].

More important, the effect of Time of Test significantly interacted with Viewing Condition, $F(1, 60) = 12.85$, $p < .001$, $\eta_p^2 = .18$. Although time estimates were less accurate (more exaggerated) at Time 1 than Time 2 in both the condition in which officers had viewed their BWC footage, $t(60) = 6.87$, $p < .001$, $d = .88$, and when they had not viewed their BWC footage, $t(60) = 2.73$, $p = .008$, $d = .35$, this change in time estimates from Time 1 to Time 2 was greater when officers had viewed their BWC footage than when they had not. However, again, it is important to note that the officers' more accurate estimates of the duration of the event at Time 2 were likely derived from the BWC video and not from their original memory of the event.

The Three Event Memory Test Items Coded for Proportion Change from Time 1 to Time 2

Three of the six event memory test items (see Appendix for test items 1, 2, and 6) were also coded for the change in the proportion of commissions and omissions from Time 1 to Time 2 as a function of post-event BWC viewing condition, that is, whether officers had viewed their BWC footage after Time 1 or not. Responses to these three event memory test items were first analyzed with a one factor MANOVA, comparing performance in the two post-event viewing conditions. In this analysis, the proportion of omissions and commissions were combined; the results thus reflect the proportion of information in officers' reports that changed from Time 1 to Time 2. The MANOVA revealed a significant main effect of Viewing Condition, $F(6,55) = 2.85$, $p = .017$, Pillai's Trace $= .237$, $\eta_p^2 = .24$; the proportion of information that changed from Time 1 to Time 2 was higher when officers had viewed their BWC footage then when they had not. These results are presented in the left panel of Figure 2. This pattern resulted for both the rates of omissions and commissions. Again, this finding suggests that the changes in officer's responses

from Time 1 to Time 2 were derived from information in the BWC video and not from their

original memory of the event.

As post-hoc analyses, we conducted a *t*-test on responses to each of these three test items

separately to compare the proportion of information in officers' reports that changed from Time

1 to Time 2 – where changed information included commissions and omissions combined – as a

function of whether officers viewed their BWC footage after Time 1 or not. Because a single

factor MANOVA was conducted on these responses, a post hoc ANOVA was not appropriate.

1. *At what point did you first draw your gun?*

The proportion of information reported by officers to this test item that changed from

Time 1 to Time 2 was greater when they had viewed their BWC video ($M = .49$, 95% CI [.35,

.63]) than when they had not ($M = .25$, 95% CI [.15, .34]), $t(60) = 2.80$, $p = .007$, $d = .36$. This is

important because it suggests that at Time 2, much of the information reported in responding to

this critical test item regarding when they had first drawn their gun was likely recalled from

having viewed the BWC video of the event and not from the event itself.

2. *At what point did you first shoot your gun?*

For this test item, the proportion of information reported by officers that changed from

Time 1 to Time 2 did not differ between conditions in which they had viewed their BWC video

($M = .30$, 95% CI [.23, .38]) or not ($M = .25$, 95% CI [.16, .34]), $t(60) = 1.12$, $p = .267$, $d = .14$.

6. *At the beginning of the simulation, where was the wo(man)'s gun?*

For this test item, the proportion of information that changed in officers' report from

Time 1 to Time 2 was greater when they had viewed their BWC video than when they had not,

$t(60) = 2.35$, $p = .022$, $d = .30$, but this difference was not significant using the more conservative

$α = .01$ level.

The Six Likert Scale State of Mind Test Items

The six Likert scale test items about officers' state of mind indicated in the Appendix assessed officers' state of mind at various points throughout each simulation scenario. Each test item was responded to on a 1 (low) – 7 (high) scale. The results on the six Likert scale state of mind test items were first analyzed with a 2 (Time of Test) x 2 (Post-Event Viewing Condition) MANOVA. The MANOVA revealed no significant effects; all three *p*-values > .20.

Overall, officers' responses to the Likert scale state of mind test items reflected high ratings of perceived danger (test item 9: $M = 6.39$, 95% CI [6.14, 6.64]) and low ratings of perceived control (test item 10: $M = 2.31$, 95% CI [1.93, 2.71]), but the ratings did not differ significantly across conditions. In other words, officers' Likert scale responses to test items about their state of mind in the simulated use-of-force incidents were in the direction consistent with what would be expected in a real-world use-of-force incident (i.e., high danger and low control), but were not sensitive to the variables manipulated in this study. The results of the analyses of each of these six test items are reported as supplementary analyses on the OSF site for Experiment 1.[10]

The Two State of Mind Test items Coded for Proportion Change from Time 1 to Time 2

Two open-ended state of mind test items (items 13 and 14) were also coded for the change in the proportion of commissions and omissions that occurred from Time 1 to Time 2 as a function of BWC viewing condition, that is, whether officers had viewed their BWC footage or not. Responses to these two states of mind test items were first analyzed with a one factor MANOVA, comparing performance in the two post-event viewing conditions. In this analysis,

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[10] The supplementary materials can be accessed on the OSF site:
https://osf.io/fg6h8/?view_only=0f8f0bc56de546edba45905023a4f789

omissions and commissions were combined. The MANOVA revealed a significant main effect

of Viewing Condition, $F(4,57) = 3.48$, $p = .013$, Pillai's Trace = .196, $\eta_p^2 = .20$; overall, the

change in rates of commissions and omissions combined were greater when officers had viewed

their BWC footage then when they had not. This result is presented in the right panel of Figure 2.

Again, this finding suggests that the changes in officer's responses from Time 1 to Time 2 were

derived from information in the BWC video and not from their original memory for the event.

Post-hoc t-tests were then conducted on responses to each of these two test items

separately to compare the proportion of information in officers' reports that changed from Time

1 to Time 2 – where changed information included commissions and omissions combined – as a

function of whether officers viewed their BWC footage after Time 1 or not. Because a single

factor MANOVA was conducted on these responses, a post hoc ANOVA was not appropriate.

The test items below are numbered to correspond to the test items listed in the Appendix.

13. Assuming that this simulation was real, in one sentence specify the point at which you

started to feel that you were in danger in this simulation.

Overall, the change in the proportion of commissions and omissions (combined) that

occurred from Time 1 to Time 2 did not differ between conditions in which officers had viewed

their BWC video ($M = .43$, 95% CI [.31, .55]) or not ($M = .30$, 95% CI [.20, .40]), $t(60) = 1.84$, p

$= .070$, $d = .24$.

14. Assuming that this simulation was real, in one sentence specify the point at which you felt

that you were in the most danger in this simulation.

Overall, the change in the proportion of commissions and omissions (combined) that

occurred from Time 1 to Time 2 did not differ between conditions in which officers had viewed

their BWC video (M = .40, 95% CI [.27, .52]) or not (M = .32, 95% CI [.20, .43]), $t(60)$ = 0.97, p = .335, d = .12.

Experiment 2

The MANOVA results from Experiment 1 confirmed that officer's memory for an incident is influenced by viewing their BWC video after the incident. Experiment 2 tests whether officers' memory for an incident is affected more by viewing their BWC video multiple times, once versus three times. This research question is of interest because police officers report that those who do view their BWC recording of an event, are likely to do so multiple times. Experiment 2 is a 2 (Time of Test: Time 1 and Time 2) x 2 (BWC Repetitions: BWC video viewed once or 3 times) within-subjects design. A schematic representation of the procedure for Experiment 2 is presented in the bottom panel of Figure 1. All officers participated in the two scenarios in the shooting simulator and then responded to test items about both scenarios at Time 1. The same 14 test items were used in Experiment 1 and Experiment 2. Officers then viewed their BWC video for both scenarios. For one of the two scenarios they each viewed their BWC video only once; for the other scenario they each viewed their BWC video a total of three times back-to-back. Everyone then answered the same Time 1 test items at Time 2. We did not include a condition without BWC video because our access to active-duty police officers was limited to those in one metropolitan police department, and we tapped almost all of these officers in this study as it was designed.

Results and Discussion

Across all analyses, the only significant effect of the number of repetitions of BWC viewing was in the MANOVA performed on the accuracy of event memory. The statistical

results for all significant and nonsignificant effects for all test items in both Experiments are included with the supplementary materials.[11]

The Five Event Memory Test Items Coded for Accuracy

Responses to the five event memory test items that were coded for accuracy (items 1 - 5) were first analyzed with a 2 (Time of Test) x 2 (BWC Repetitions: BWC video viewed once or 3 times) MANOVA. Two effects were significant in this analysis. The MANOVA revealed a significant main effect of Time of Test, $F(5,58) = 6.03$, $p < .001$, Pillai's Trace = .342, $\eta_p^2 = .34$; as in Experiment 1, averaged across the five event memory test items, responses were more accurate at Time 2 than at Time 1. The main effect of BWC Repetitions was also significant, $F(5,58) = 2.88$, $p = .022$; Pillai's Trace = .199, $\eta_p^2 = .20$; overall, response accuracy was higher when officers had viewed their BWC footage 3 times than once.

As post hoc analyses, separate 2 (Time of Test) x 2 (BWC Repetitions) ANOVAs were then performed on responses to each of the five event memory test items coded for accuracy. In none of the analyses of individual test items was the main effect of the BWC Repetitions condition significant. Results are presented below for test items for which there were significant effects. The statistical results for all significant and nonsignificant effects for all test items in both experiments are included with the supplementary materials on the OSF site for each experiment. At this OSF site we have also posted the descriptive statistics that correspond to all conditions in both experiments. Test items below are numbered to correspond to the Appendix.

 1. *At what point did you first draw your gun?*

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[11] All statistical results can be accessed with the supplementary materials on the OSF site: https://osf.io/fg6h8/?view_only=0f8f0bc56de546edba45905023a4f789

The only significant effect in the analysis of the accuracy of responses to this test item was the main effect of Time of Test, $F(1,63) = 9.02$, $p = .004$, $\eta_p^2 = .13$. As in Experiment 1, responses were less accurate at Time 1 ($M = .73$, 95% CI [.62, .84]) than at Time 2 ($M = .86$, 95% CI [.77, .94]). No other effects were significant in the analysis of responses to this test item.

5. *What was the total duration of this event?*

The accuracy of responses to this test item was analyzed in terms of the difference score between the actual duration and the estimated duration, where zero indicates an accurate time estimate. Again, the only significant effect in the analysis of response accuracy to this test item was the main effect of Time of Test, $F(1,63) = 17.18$, $p < .001$, $\eta_p^2 = .22$. Responses were less accurate (more exaggerated) at Time 1 ($M = 27.90$s, 95% CI [17.96s, 37.83s]) than at Time 2 ($M = 16.39$s, 95% CI [7.24s, 25.54s]).

The Three Event Memory Test Items Coded for Proportion Change from Time 1 to Time 2

Three of the six event memory test items (see Appendix for items 1, 2, and 6) were also coded for the change in the proportion of commissions and omissions from Time 1 to Time 2. Responses to these three event memory test items were first analyzed with a one factor MANOVA, comparing performance in the two BWC Repetition conditions. In this analysis, omissions and commissions were combined. The MANOVA revealed a nonsignificant effect of the number of BWC repetitions in the post-event viewing condition, $F(6,58) = 0.88$, $p = .514$, Pillai's Trace $= .084$, $\eta_p^2 = .08$.

As post hoc analyses, *t*-test were conducted on responses to the three event memory test items coded for the change in the proportion of commissions and omissions from Time 1 to Time 2. In none of the analyses of individual test items was the main effect of the BWC Repetitions condition significant.

The Six Likert Scale State of Mind Test Items

State of mind test items included six Likert scale test items and two open-ended test items. Officers' responses to each test items were coded following the same process specified for Experiment 1. The six Likert scale test items indicated in the Appendix assessed officers' state of mind at various points throughout each simulation scenario. Each test item was responded to on a 1 (low) – 7 (high) scale. The results on the six Likert scale state of mind test items were first analyzed with a 2 (Time of Test) x 2 (BWC Repetitions: BWC video viewed once or 3 times) MANOVA. The MANOVA revealed no significant effects; all three p-values > .148.

Overall, officers' responses reflected high ratings of perceived danger (test item 9: M = 6.39, 95% CI [6.14, 6.65]) and low ratings of perceived control (test item 10: M = 2.43, 95% CI [1.99, 2.86]), and there were few significant differences in ratings across conditions. Together, and consistent with the results of Experiment 1, officers' Likert scale responses to test items about the simulated use-of-force incidents were in the direction consistent with what would be expected in a real-world use-of-force incident (i.e., high danger and low control), but were not sensitive to the manipulations used in this study. The results of the analyses of these six test items are reported with supplementary materials on the OSF site.[12]

The Two State of Mind Test Items Coded for Proportion Change from Time 1 to Time 2

Responses to the two open-ended state of mind test items (items 13 and 14) were first assessed with a MANOVA that compared the change in the proportion of commissions and omissions from Time 1 to Time 2 as a function of the BWC Repetitions condition. In this analysis, omissions and commissions were combined. The MANOVA revealed a nonsignificant

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[12] The supplementary materials can be accessed on the OSF site at: https://osf.io/cvwjr/?view_only=625f38e0ff3248fb9b9bc65248c7fca9

effect of BWC Repetitions, $F(4,60) = 1.33$, $p = .271$, Pillai's Trace $= .081$, $\eta_p^2 = .08$. The

analyses of responses to these two test items individually were also nonsignificant.

<center>**General Discussion**</center>

These results affirm that viewing the BWC video of a use-of-force incident alters an

officer's event memory and memory for their state of mind during the incident. In Experiment 1,

based on the results of the MANOVAs that combine responses to the test items in each category

type, the proportion of information in officers' reports that changed from Time 1 to Time 2 was

greater when officers had viewed their BWC footage then when they had not (see Figure 2). This

pattern resulted for both rates of commissions and omissions and for both event memory and

memory for state of mind. In addition, the accuracy of responses to event memory test items

improved from Time 1 to Time 2, and this change in memory accuracy was greater when officers

had viewed their BWC footage than when they had not.

These findings are what would be predicted by post-event suggestion (Loftus, 1975;

Pezdek, 1977), wherein viewing the BWC footage of an event serves as a source of post-event

information that alters memory for the original event experienced. It is important to consider that

the "perspective of the officer," the importance of which is addressed by *Graham v. Connor*

(1989), is not necessarily the same as the perspective of the BWC on the officer's chest.

Differences between an officer's perspective and that of the BWC on his/her chest could result

from differences in, for example, where the officer's head versus the BWC were directed, the

greater clarity of peripheral information for the BWC than for the officer's vision, and the

officer's ability to see off-camera details. If an officer's event memory and memory for their

state of mind at the time of the event is used to determine whether their use of force was

justified, then it is important to ensure that these memories are preserved and not altered by viewing their BWC footage, which we now know is a powerful source of post-event suggestion.

However, this point is often misunderstood. If viewing one's BWC video increases the accuracy and quantity of what is recalled following a use-of-force incident, why not recommend that officers view their BWC video before completing their reports of such incidents? Based on the US Supreme Court decision of *Graham v. Connor* (1989) it is important to know what the officer remembers from having participated in the original incident and not from the BWC video viewed afterward. It appears from this study that yes, officers' memory for what was experienced on the scene is suggestively affected by viewing their BWC footage afterward, and accordingly, there should be constraints on permitting officers to view their BWC video prior to completing their incident reports. At some time in the investigation and possible litigation following a use-of-force incident, it is critical for third parties to know what actually occurred during an incident, and useful (but imperfect) information that would inform this issue is available on the BWC video. However, this is a separate issue than what the participating officer's perception of the incident was on the scene.

Experiment 2 examined whether viewing one's BWC video multiple times has a stronger influence than viewing it only once. Few differences resulted as a function of viewing the BWC video once or three times. One possible interpretation of this result is that the three repetitions were sequenced close in time, perhaps exhibiting what in the learning literature is called massed (as opposed to spaced) practice. Future studies are needed in which the multiple repetitions of viewing the BWC video are spaced over hours or perhaps days.

Analyses of the Likert scale data suggest that officers in this study found the simulations immersive, and they were highly engaged. In both experiments, officers reported high ratings of

perceived danger and low ratings of perceived control, the precise direction of effects that would

be predicted in a real-world use-of-force incident. This is reassuring and supports the validity of

our methodological approach in studying the impact of BWCs.

Officers in both experiments provided high ratings of their justification in the level of

force used. This refers to the Likert scale ratings provided to test item 12, asking officers how

justified they thought they were in the level of force they had chosen to use in each simulation.[13]

The level of force used by officers, measured in terms of what weapon they drew first, when they

first drew their gun, when they first shot their gun, and how many shots were fired, varied across

officers. Regardless, they all felt highly justified in the level of force that they had chosen to use

(on the $1 - 7$ Likert scale, Experiment 1: $M = 6.92$, 95% CI [6.84, 7.00]; Experiment 2: $M = 6.91$,

95% CI [6.75, 7.07])[14]. If this finding generalizes to officers' state of mind during real-world

use-of-force incidents, it suggests that although an event may be fast moving, complex, and

unpredictable, officers consider that the level of force with which they responded reflects their

best judgment regarding what the situation required of them.

One compromise solution is that after a use-of-force incident, officers could first

complete their written report. Then, only after doing so could they then view their BWC video

and, if they notice any errors, amend their report. The Oakland Police Department has instituted

this two-step process. In a pilot study to assess this process, Dawes et al. (2015) reported that

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[13] See these results in the supplementary analyses section of each experiment's OSF site:
https://osf.io/fg6h8/?view_only=cfeeffd1d6964646b7fa57536774b95c (Exp. 1)
https://osf.io/cvwjr/?view_only=45576668e7f34e6183a6fedbde195f69 (Exp. 2)

[14] We offer no value judgment in terms of how much force the police officers in this study chose
to use in the simulator. In fact, in both scenarios used in this study, at the end of the scenario one
of the two characters pointed a loaded gun at either the officer or the other character. Had the
shooter not been shot, and the simulation had continued, the officer or the other character would
have been shot.

most of the corrected errors made by officers after viewing their BWC video were coded as moderate (Mean per officer = 5.4); few were major (Mean per officer = 0.9). Advantages of this two-step process also follow from recent findings by Vredeveldt et al (2021). However, once an officer has viewed their BWC video, it is not possible to determine what they remembered from their memory for the incident versus the BWC video; the bell cannot be unrung.

There are some limitations to acknowledge in this study. First, we were not able to include a condition in which officers viewed their BWC before writing their initial report and are thus not able to assess the effects of viewing BWC footage in this condition. Second, an alternative interpretation of our results is that the change in details reported from Time 1 to Time 2 is not necessarily evidence of changes in officers' memory but rather possible evidence that what officers choose to report depends on whether they reviewed their footage. Future research should test this alternative interpretation. Another limitation of our study is that it involved only two training scenarios and a limited set of test items specific to these scenarios. The two training scenarios were professionally prepared for training police officers; however, each was only about one minute long. Testing whether our findings generalize to a broader range of stimuli and test items requires additional research.

As with every area of applied research, in addition to the recommendations grounded in science, there are real-world considerations. In this case it is important to recognize that today's climate regarding policing is a litigious one in which police often feel that activists are eager to apply the "dishonest cop narrative" with pressure for excessive use-of-force and dishonesty allegations, both of which are terminable offenses in Law Enforcement (see for example, Black & Kliem, 2020; Larkin, 2021). According to this narrative, if there are discrepancies between a police officer's report and information in their BWC video, it can be construed as evidence that

the officer was dishonest. Thus, police departments and police unions are highly motivated to

protect the integrity of police officers by giving them the opportunity to make their report as

accurate as possible. The problem is defining what is accurate. Critically, the perspective of the

BWC does not duplicate the perspective of the officer. Further, because human memory is an

imperfect process, there *should be* discrepancies between an officer's report – that reflects their

(imperfect) memory for the incident – and their BWC video.

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POLICE VIEWING THEIR BODY-WORN CAMERA VIDEO

Table 1

Demographics of Police Officer Sample Included in Experiments 1 and 2

Variables	Frequency	Mean [CI]
Age		39.72 [37.94, 41.51]
Gender		
Female	12	
Male	113	
Ethnicity		
African American	12	
Asian/Pacific Islander	11	
Caucasian	50	
Hispanic/Latino	45	
Mixed ethnicity	7	
Years on the police force		13.97 [12.24, 15.69]
Police rank		
Officer	78	
Detective	8	
Corporal	17	
Sergeant	17	
Lieutenant	3	
Commander	2	
Served in the military		
Yes	21	
No	104	
Ever involved in an OIS?		
Yes	25	
No	100	
Ever shot at while on duty?		
Yes	14	
No	111	

Note. The values reported in this table reflect the total samples of both experiments combined (125 police officers).

Figure 1

Schematic Representation of the Procedure for Experiment 1 (Top Panel) and Experiment 2 (Bottom Panel)
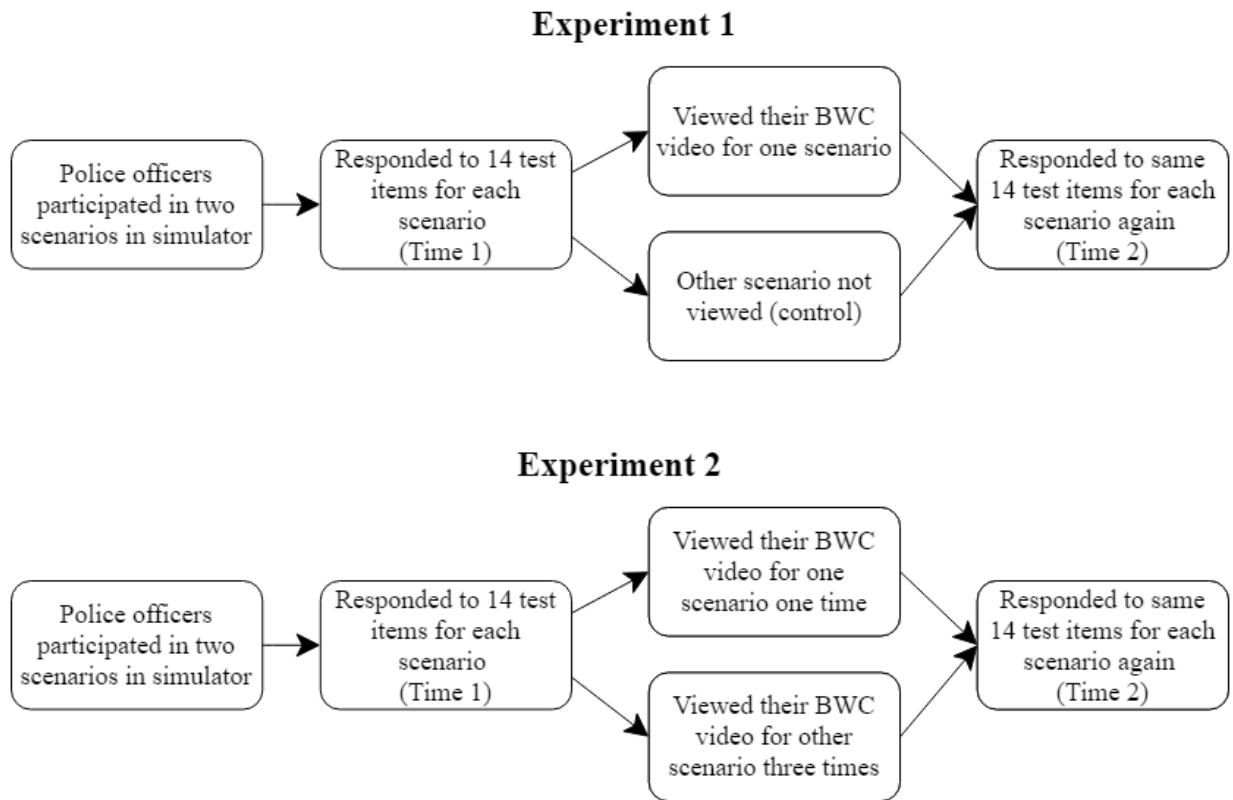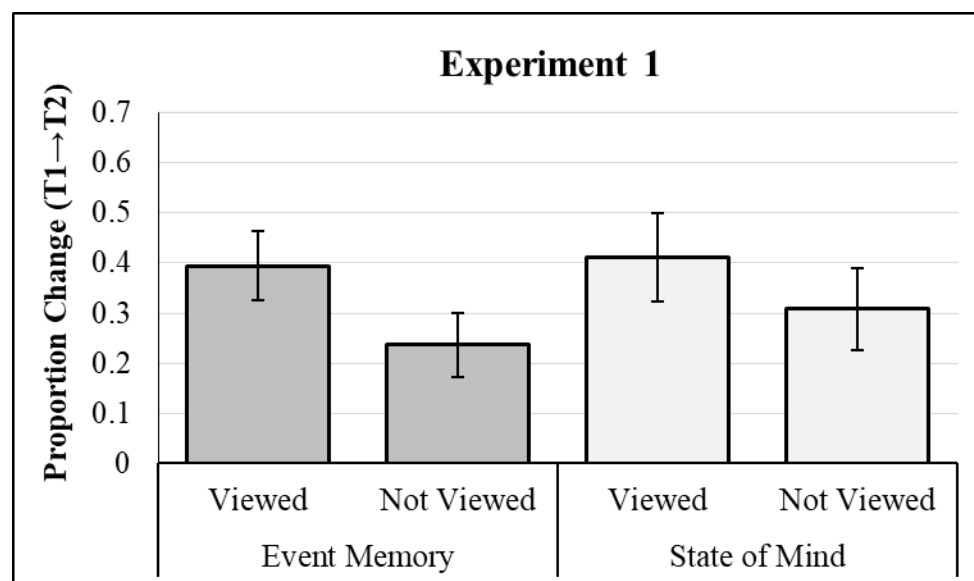
Figure 2

Significant Main Effects of Viewing Condition (BWC Viewed or Not Viewed) on Proportion

Change from Time 1 to Time 2 for Event Memory and State of Mind Test Items in Experiment 1

Note. Results on the left panel reflect the significant main effect of Post-Event Viewing Condition from the MANOVA on the proportion change from Time 1 to Time 2 for responses to event memory test items, $F(6,55) = 2.85$, $p = .017$, Pillai's Trace $= .237$, $\eta_p^2 = .24$. Results on the right panel reflect the significant main effect of Post-Event Viewing Condition from the MANOVA on the proportion change from Time 1 to Time 2 for responses to state of mind test items, $F(4,57) = 3.48$, $p = .013$, Pillai's Trace $= .196$, $\eta_p^2 = .20$. The proportion of ommissions and commissions were combined in these analyses. Error bars indicate the 95% confidence intervals.

Appendix

List of the 14 Test Items Included in Experiments 1 and 2

Event Memory Test Items

1. At what point did you first draw your gun?

   - Responses coded for accuracy

   - Responses coded for commissions and omissions

2. At what point did you first shoot your gun

   - Responses coded for accuracy

   - Responses coded for commissions and omissions

3. How many times did you shoot your gun?

   - Responses coded for accuracy

4. Which equipment did you pull out first?

   - Responses coded for accuracy

5. What was the total duration of this event?

   - Responses coded for accuracy

6. At the beginning of the simulation, where was the wo(man)'s gun?

   - Responses coded only for commissions and omissions

Likert Scale State of Mind Test Items

7. Rate how much danger you felt you were in at the point that you started to feel that you were in danger in this simulation.

8. Rate how much control of the situation you felt you had at the point that you started to feel that you were in danger in this simulation.

9. Rate how much danger you felt you were in at the point that you felt the most danger.

10. Rate how much control of the situation you felt you had at the point that you felt the most danger in this simulation.

11. Now consider danger to other people in the simulation. Assuming that this simulation was real, rate how much danger you felt that other people in the video were in at the point (described above) that you perceived the most danger in this simulation.

12. Knowing that this was a use-of-force training session in which officers are likely to make some mistakes, rate how justified you think you were in the level of force that you chose to use in this simulation.

Open-Ended State of Mind Test Items (Responses Coded for Commissions and Omissions)

13. Assuming that this simulation was real, in one sentence specify the point at which you started to feel that you were in danger in this simulation.

14. Assuming that this simulation was real, in one sentence specify the point at which you felt that you were in the most danger in this simulation.