

Post-Identification Feedback Effects: Investigators and Evaluators

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Summary: We investigated the effects of post-identification feedback and viewing conditions on beliefs and interviewing tactics of participant-investigators, crime reports of participant-witnesses and participant-evaluators' credibility judgments of the witnesses. Study 1 participants assumed the roles of witness and investigator ($N=167$ pairs). Witnesses' view of a simulated crime video was manipulated by distance from viewing monitor: 2 or 9 ft. Participants made a line-up identification and received either positive feedback or no feedback. Significant effects for witnesses and investigators were associated with viewing condition and post-identification feedback. Interviews between investigator-witness pairs were videotaped. Investigators asked more positive, leading questions when they were led to believe that the witness had identified the suspect. In Study 2 evaluators ($N=302$) viewed the witness-investigator interviews. Viewing condition had no effect on judgments of witness credibility but positive post-identification feedback led evaluators to judge witnesses as more credible than witnesses who received no feedback. Copyright © 2010 John Wiley & Sons, Ltd.

Post-identification feedback from a line-up administrator or co-witness can contaminate eyewitness evidence, changing witnesses' confidence in their identification decisions and shifting their recollections of the events and their viewing experience (Bradfield, Wells, & Olson, 2002; Lampinen, Scott, Pratt, Leding, & Arnal, 2007; Wells & Bradfield, 1998). The phenomenon is known as *the post-identification (post-ID) feedback effect* (Wells & Bradfield, 1998, 1999). One of the first studies to test the post-ID feedback paradigm provided participant-witnesses with either positive (i.e. 'good you identified the suspect'), negative (i.e. 'actually, the suspect number was...') or no feedback after they made their ID decision. Compared to witnesses who received no feedback, witnesses who received positive feedback reported greater confidence in their ID decision, better opportunity to view the perpetrator, and greater ease in making the ID. Those receiving negative feedback demonstrated the converse response pattern. Compared to the no feedback (control), these participants reported lower identification confidence, more difficulty in making their identification decision, and a poorer opportunity to view the perpetrator (Wells & Bradfield, 1998). Importantly, developments in the post-ID feedback literature since this early research demonstrate post-ID feedback effects beyond the lab; post-ID feedback influences real witnesses to actual crimes (Wright & Skagerberg, 2007). Furthermore, post-ID feedback effects are robust, delay in delivering the feedback or delay in testing for the influence of that feedback does not moderate the effects produced by the feedback (Wells, Olson, & Charman, 2003).

Douglass, Neuschatz, Imrich, and Wilkinson (2010) recently expanded the scope of study of post-ID feedback effects to assess the impact of the feedback on third party

evaluators' impressions of eyewitness credibility. Douglass, Neuschatz et al. (2010) asked third party evaluators to watch a videotaped interview of a witness to a simulated crime and then rate the witness's credibility. Witnesses had received either positive, negative or no post-ID feedback. Third party evaluators who viewed the testimony of witnesses who had received positive post-ID feedback assessed those witnesses as more accurate and more credible than witnesses who had received disconfirming feedback or no post-ID feedback (Douglass, Neuschatz et al., 2010).

The current research builds on Douglass, Neuschatz et al.'s (2010) work and broadens the scope of inquiry to examine witnesses and police investigators in the context of post-ID feedback effects. Casting participants in the role of police investigator is a novel step in this research arena. Whereas eyewitnesses and jurors have been the focus of studies by psycholegal researchers for more than 30 years, empirical studies focused on police investigators have emerged only in the last few years. This recent research reveals that participant-investigators are greatly influenced by witnesses' line-up decisions (Boyce, Lindsay, & Brimacombe, 2008; Dahl, Lindsay, & Brimacombe, 2006). An investigator's belief in the suspect's guilt grows stronger when an eyewitness identifies the suspect and declines when the witness chooses a foil or rejects the line-up. The research illustrates the power that awareness of the witness's identification decision can have on an investigator's conclusions about the *suspect's guilt* and raises the question of how this awareness can influence the investigators' *assessment of the witness's credibility* and approach to gathering evidence from the witness.

In a related line of research Garrioch and Brimacombe (2001) found that investigators led to believe that a witness selected the culprit from the line-up altered their behaviour in the investigative interview with the witness. Participant-investigators who believed their witness had made a correct

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identification provided subtle, unintentional, nonverbal cues (e.g. eye contact) leading witnesses to be more confident in reporting their crime memories. Investigator opinion of witness credibility undeniably has important implications, for instance, directing other aspects of the investigation, determining if eyewitness evidence is introduced in court (Boyce *et al.*, 2008), and assessment of other types of evidence, such as a suspect's alibi (Dahl, Brimacombe, & Lindsay, 2009).

The aforementioned studies tap the issue of investigators' assessment of eyewitness evidence and provide a foundation for the current research. The previous studies manipulated investigators' *a priori* beliefs about the suspect's position within the line-up and demonstrated the powerful effects associated with securing a positive identification from a witness. In a similar vein, our research provides post-ID feedback to investigators and studies the impact of that information on investigator beliefs and tactics in gathering information from eyewitnesses.

Interviewers with preconceived ideas about a witness' credibility can manipulate the investigative interview in a variety of ways. For example, they can gather predominantly confirmatory information, avoid areas of inconsistent evidence, and ask leading questions that control the interviewee's answers (e.g. Snyder & Swann, 1978; see Ceci & Bruck, 1995 for further discussion). Our experimental procedure is unique in the context of post-ID feedback research in that it casts participants in the roles of both investigator as well as witness. This procedure provides an opportunity to manipulate the beliefs of both of these individuals and study the *interplay* between them as the investigator gathers a crime report from the witness. To assess the perceived credibility of our sample of witnesses we followed the lead of Douglass, Neuschatz *et al.* (2010) and studied the opinions of third party evaluators viewing video footage of interviews between a witness and investigator. Each witness was questioned by a participant-investigator while being videotaped. The videotaped interviews were subsequently shown to a new sample of participants to assess the credibility of the videotaped witness reports. Our experimental approach allows us to assess the 'train of bias' associated with post-ID feedback effects; from investigator to witness to third party evaluators.

Viewing Conditions and Post-ID Feedback Effect: Witnesses and Investigators. 'It is a matter of common sense that a person is easier to recognize when close than when far away' (Loftus & Harley, 2005, p. 43). Wells' (1978) discussion of estimator variables – factors that can affect eyewitness reports that are outside the control of the justice system (e.g. lighting, distance, arousal) – states that indeed distance can affect eyewitness reports. In a recent article, Loftus and Harley (2005) report that after 25 ft face recognition for people with normal vision diminishes; recognition drops to 0 at approximately 150 ft. Distance from the perpetrator is but one facet of a witness' viewing experience. The quality of a witness' view may also involve lighting, length of time the culprit was in sight, whether (s)he was moving or stationary, wearing a disguise or in possession of a weapon. In fact,

eyewitness view has been operationalised in a number of ways, perhaps most comprehensively by Lindsay, Wells, and Rumpel (1981) who varied participant's view of the perpetrator by altering the amount of time the perpetrator was in the presence of the witness, the amount of discussion between the thief and participant, and the participant's ability to see the perpetrator's face and hair. In the interest of simplifying our operationalisation of eyewitness view (a secondary focus of the current research) we simply varied eyewitness' physical distance from the video monitor that played simulated crime video.

Our research queries how witnesses' and investigators' opinions of view affect their evaluations of the witnesses' credibility and reporting of what they witnessed. Note that this research question does not demand that those with a good view truly have a superior ability to view the perpetrator just that they maintain the subjective opinion that they had a better view than those with a poor view. Hence, we achieved our goal of manipulating participants' *opinions* of their view rather than their true view of the culprit by simply varying their distance from the perpetrator. Although view has never previously been experimentally manipulated in the post-ID literature, the range of stimuli used by researchers over the years have provided participant witnesses with crime views that have varied from quite poor (e.g. grainy security footage, Wells & Bradfield, 1998) to optimal (e.g. real crimes, Wright & Skagerberg, 2007). Collectively, these studies suggest that the quality of view does not alter the power of the post-ID effect. In fact, related research testing the trace strength hypothesis found that having a weaker recollection for the event (manipulated with age and retention interval) did not alter the potency of the post-ID feedback effect (Neuschatz *et al.*, 2005). Hence, we have no reason to suspect that an eyewitness's view (good or poor) would alter the witness' susceptibility to the immediate influence of post-ID feedback from a line-up administrator.

However, as our research shifts attention from witnesses to investigators, we see merit to studying eyewitness view in the context of post-ID feedback. It is reasonable to assume that investigators may learn the witness's proximity to the perpetrator and/or the general crime viewing conditions. To the extent that investigator beliefs are biased by knowledge of witness viewing conditions, there is possibility that investigator bias will be transmitted to witnesses as the investigators' beliefs shape the investigative interview process and ultimately affect the witness' beliefs and crime recollection. Essentially we see the possibility that varying the witness' distance from the perpetrator may have latent effects on the witness by influencing investigators' preconceived notions of the credibility of the witness and data-gathering from that witness. Psychological research on confirmation bias warns that once an attitude has been formed, individuals tend to seek, interpret, and create information to support those preconceived notions (Nickerson, 1998). Research has demonstrated that interviewers' preconceived ideas can bias questioning in the forensic interview (e.g. Meissner & Kassin, 2002, 2004).

Our Study 1 methodology casts participants in the roles of both witness and investigator, provides both individuals with

information about the witness's quality of view and ID decision (whether the suspect was purportedly identified), then engages them in a post-ID interview. We expected investigators' impressions of the witness to vary with post-ID feedback and viewing condition information. As was the case in Garrioch and Brimacombe (2001), we expected that investigators' assessments of the witness would subtly drive investigator questioning and we explore this in Study 2. In addition, in Study 2 we assess third party evaluators' appraisals of the witnesses' testimonies.

STUDY 1

Study 1 explores the question of how witnesses and investigators are affected by knowledge of a witness's crime view and whether the witness purportedly identified the suspect. Pairs of undergraduate participants were randomly assigned to the roles of witness and investigator. The participant-witness viewed a crime video (from a distance of either 2 or 9 ft) and then attempted to identify the perpetrator from a target absent line-up. The witness was then either given no information about his or her line-up decision or was given positive feedback suggesting that the witness had identified the suspect. Participant-investigators were then briefed about their witnesses' viewing conditions (good, poor or no information) and line-up choice (positive or no information). Afterward, the investigator interviewed the witness about his or her crime recollection. All interviews were videotaped.

Method

Participants and design

Three hundred and thirty-four undergraduate university students (94 male and 240 female) participated in witness-investigator pairs (167 pairs). Participants ranging from 17 to 47 ($M = 20$, $SD = 4.20$) years of age received bonus course credit for their participation. At every session, participants were randomly assigned to the role of either witness or investigator in a three view (good, poor or control) \times 2 post-ID feedback (positive or no feedback) between-subjects factorial design. Thus, each investigator-witness pair was assigned to one of six view/feedback combination conditions, that is one of three viewing conditions, good view ($n = 56$), poor view ($n = 55$), or control ($n = 56$) and one of two post-ID feedback conditions, positive ($n = 83$) or no feedback ($n = 84$).

Procedure

Upon arrival at the laboratory, participants were informed that the experiment involved two different participant roles. The participant seated closest to the door was always assigned to the role of investigator and the other participant was assigned the role of witness. The investigator was asked to accompany the experimenter to an adjacent room while the witness remained in the initial meeting room.

Witnesses. In the initial testing room, the participant-witness was seated in front of a 12 in. television monitor and instructed to watch a video. The video depicted a man on a

roof placing a bomb in an air shaft. The perpetrators' face was clearly visible for 15 seconds of the 30-second crime video. The crime portion of the video was followed by a blank screen, then videotaped instructions from a researcher informing the participant that (s)he was participating in an eyewitness experiment and that (s)he had just witnessed a staged crime and that the man planting the bomb in the airshaft should be considered the perpetrator. The videotaped researcher also informed the witness that some participants in this study sit in a chair positioned close to the screen and have a good view of the crime video, and other participants sit in a chair positioned farther from the screen and have a worse view of the video.

Viewing conditions manipulation. For experimental sessions that included a manipulation of witness view, two chairs were set up facing the monitor: one chair was 2 ft from the monitor; the other chair was 9 ft from the monitor. Participants randomly assigned to the good view condition were seated in the chair 2 ft from the monitor whereas those in the poor view condition were seated 9 ft from the monitor. The literature indicates that there is no diminishing effect of distance on face perception up to 25 ft (Loftus & Harley, 2005). Our focus in this research was investigators' and evaluators' *impressions* of whether witnesses had a good or poor view of the crime. Hence, our viewing condition manipulation was constructed so that participants had the sense that they had a good or a poor view relative to another witness (implicated by the position of the second chair facing the monitor) rather than providing them with views that differed appreciably in opportunity to see the perpetrator. Indeed, pilot testing ($N = 20$) demonstrated that seating participants farther from the monitor (poor view) led them to report that they had a worse view of the perpetrator ($M = 5.50$, $SD = 1.58$) than those seated closer to the monitor (good view) ($M = 8.20$, $SD = 1.32$), $t(18) = 4.15$, $p < .01$ (Likert scale ranging from 0 = very poor view to 10 = very good view).

To affirm the view manipulation, after watching the crime video, participants were explicitly told that in the experiment, the seating position of participants was varied by the position of the two chairs facing the monitor and the chair 2 ft from the monitor was described as the 'good view position'; the chair 9 ft from the monitor was labelled the 'poor view position'. In the control condition, only one chair was positioned (2 ft) in front of the monitor (good view position) and witnesses received no information labelling the view as either good or poor. After viewing the crime video, all participant-witnesses were told that they would be asked to make an identification of the perpetrator from a photo line-up and will engage in an interview with a participant-investigator.

The photo line-up. A six-person target-absent photo line-up was then shown to the witness by the research experimenter. All the line-up photos matched the suspect's general description (i.e. male, mid twenties, brown short hair). Line-up photos were fastened to a clipboard ensuring that they were presented simultaneously and in the same order for every participant-witness. Witnesses were provided with

biased instructions that directed them to select the culprit from the line-up and were not told that the culprit's photo may not be present. A target absent line-up paired with biased instructions has been shown to be an effective tool for researchers to induce witnesses to make an (incorrect) choice from the line-up (e.g. Wells & Bradfield, 1998). All of our witnesses made a foil ID from the line-up.

Line-up feedback manipulation. In the positive feedback condition, the experimenter stated 'Good, you identified the actual suspect' following the witness's selection from the line-up. No feedback about line-up choice was provided by the experimenter to witnesses in the no information condition.

Investigators. Participant-investigators were taken to an adjacent room and left alone to watch a video and read the material provided in a file folder located on the desk. The video informed the participant that (s)he was participating in a study of eyewitness testimony and would be playing the role of investigating police officer in the study while the other participant would play the role of witness. The videotaped instructions explained that the witness was currently watching a crime video and that afterward (s)he would be responsible for interviewing the witness about the witnessed event. In conditions where view was manipulated, the video also informed participant-investigators that some witnesses sit close to the monitor and have a good view of the crime and others sit farther from the video and have a poor view of the crime. Investigators were provided with guidelines as to the information they should seek when questioning the witnesses (a description of the crime and the culprit, the length of time the witness saw the perpetrator, and the ease with which the witness made his/her identification). Investigators were instructed to develop their own interview script and to ask any questions they deemed helpful to developing their report. We welcomed the variation we would collect in investigators' questions and questioning style as we were interested in capturing (rather than controlling) variation in the investigative interviews as a function of investigators' and witnesses' *a priori* knowledge of witness view and ID feedback.

Viewing condition information and post-ID feedback to the investigator. Before the interviewer and witness were reunited to commence an investigative interview, the experimenter met privately with the participant-investigator. The experimenter asked if the participant-investigator had any questions and (when view was manipulated) reiterated what was said in the video about view, that is 'some participants in this study sit close to the screen and have a good view of the crime video and other participants sit farther from the screen and have a worse view of the video'. The witness today is in the 'good/poor view condition'. Witnesses and investigators always received the same view information. Those investigators in the 'no information view' condition were simply asked if they had any questions.

Investigators in the 'positive line-up feedback' condition were then shown the photo line-up by the experimenter who pointed to the line-up member the witness had chosen and

echoed the post-ID feedback the witness was given (i.e. the experimenter said, 'Good. Your witness identified the actual suspect.').¹ Participant-investigators in the 'no feedback' condition were simply shown the photo line-up, told that the witness had made an ID and was now awaiting the interview the investigator would conduct. Again, witnesses and investigators always received the same line-up feedback (positive or no information). The experimenter escorted the participant-investigator to the room where the witness waited. In conditions where witness view information was manipulated, before entering the room the experimenter explained how view was manipulated by the position of the chairs in front of the monitor. As they entered the room, the investigator had opportunity to see the chairs where the witness sat to watch the video, either 2 or 9 ft from the monitor.

The Interview. The witness-investigator dyad was seated across from one another and asked for their verbal consent to be videotaped. Once consent was given, the participants were encouraged to begin the interview and the researcher left the taping room. Two cameras videotaped the witness-investigator interaction: one focused on the investigator and the other on the witness (face and upper torso). Participant-investigators followed the interview guidelines which outlined objectives for the interview. The objectives required investigators to: (i) get a description of the crime, (ii) get a description of the man who planted the bomb, and (iii) confirm that the witness made an ID from the line-up. In addition investigators were asked to find out (iv) how good an opportunity the witness had to view the perpetrator, (v) how long they viewed the perpetrator, (vi) how easy or difficult it was to make the ID, (vii) how long it took to make the ID, and (viii) how confident the witness was in his/her ID. Lastly, investigators were given the directive to assess whether the person was a 'good witness'. Investigators were instructed to seek clarification at any point in the interview and to ask any questions they felt helpful to their investigative process. At the conclusion of the interview but before the participant-witnesses and investigators independently completed their questionnaires, the experimenter returned and gave the participant-investigator and witness videotape release forms on which they were asked to give their consent for future use of the tape (e.g. showing to other participants). The videotaped interviews served as stimuli for Study 2.

The Questionnaires. Both investigators and witnesses independently completed parallel questionnaires that probed

¹Investigators received information about the witness's viewing conditions then received information about the witness's ID decision. Participant-investigator presence was experimentally manipulated so that the investigators were either present in the room during the line-up administration and remained in the room to 'overhear' the experimenter deliver post-ID feedback (investigator present) or stayed in the other room while feedback was delivered (investigator absent). Those investigators who were not present to observe the witness making an identification and to hear the feedback were briefed by the experimenter as to the line-up member the witness chose and the information the witness received (positive feedback or control) before coming in to perform the interview. Statistical analyses of the investigator present versus absent variable produced a few statistically significant findings however the findings do not contribute to our results in this report in a meaningful or consistent way, they will not be discussed further. Readers interested in this result are invited to contact the lead author for details.

Table 1. Mean (SD) ratings for participant-witnesses, investigators and evaluators by post-ID line-up feedback condition

	Witness questionnaire		Investigator questionnaire		Evaluator questionnaire	
	Positive feedback	No feedback	Positive feedback	No feedback	Positive feedback	No feedback
1. Certainty in ID	71.44 (19.29)**	52.83 (25.98)	80.00 (24.42)**	49.10 (25.39)	56.18 (21.60)***	42.47 (21.16)
2. Good basis for ID	6.73 (1.97)**	5.24 (2.39)	7.10 (2.19)**	5.23 (2.37)	5.32 (1.65)***	4.45 (1.75)
3. Ease of line-up selection	6.33 (2.19)**	3.88 (2.49)	6.36 (2.49)**	4.05 (2.57)	5.04 (2.04)	4.14 (1.82)
4. Estimated time to make an ID	4.86 (2.22)	5.34 (2.53)	4.27 (2.34)	5.14 (2.46)	4.69 (1.96)	4.86 (2.06)
5. Willingness for to testify in court	5.61 (2.60)**	3.67 (2.64)	6.98 (2.32)**	4.67 (2.70)	—	—
6. Quality of the witness's recognition memory	6.91 (2.16)	6.10 (2.65)	—	—	—	—
7. Clarity of image of the culprit's face	6.58 (2.06)**	5.47 (2.24)	6.64 (2.14)**	5.22 (2.53)	4.92 (1.63)	4.25 (1.39)
8. General accuracy of the witness	—	—	—	—	5.34 (1.59)	4.82 (1.65)
9. Willingness to convict	—	—	—	—	4.02 (1.89)***	3.11 (1.80)
10. Witness's credibility	—	—	—	—	5.52 (1.61)	4.76 (1.88)
11. Quality of view of the perpetrator	8.00 (1.66)*	7.07 (2.13)	7.14 (2.34)*	6.04 (2.58)	6.16 (1.75)*	5.38 (1.61)
12. Ability to make out the features of the culprit's face	6.83 (1.67)*	5.67 (2.19)	6.03 (2.51)*	4.88 (2.32)	4.63 (1.68)	4.04 (1.88)
13. Amount of attention being paid to the culprit's face	6.07 (2.02)	5.44 (2.23)	6.40 (2.45)*	5.14 (2.44)	3.79 (1.48)	3.37 (1.72)
14. Estimation of the <i>closest</i> distance between the camera-eye view and the face of the culprit	2.94 (2.47)	3.06 (1.53)	3.94 (2.07)*	5.13 (2.20)	4.77 (1.61)	5.35 (1.59)

Note: Standard deviations are listed in parentheses. Numbers 1–10 represent ID items and number 11–14 represent viewing condition items. * $p \leq .01$, ** $p \leq .008$, *** $p \leq .006$.

impressions of the quality of the witness' crime recollection (the questionnaires were modelled on measures developed by Wells & Bradfield, 1998). Participant-witnesses and investigators responded to questions on 10-point Likert scales with higher scores indicating more positive responses. Confidence was the exception and was rated as a scale ranging from 0% to 100%. Both questionnaires queried the same content, however, witnesses reported on their personal experience (e.g. 'How much attention were you paying to the face of the man in the video while you were viewing the tape?' and 'How good a view did you get of the man who planted the bomb?') whereas, the investigators indicated their impressions of the witness (e.g. 'How good a view do you think the witness got of the man who planted the bomb?' and 'To what extent do you feel the witness had a good basis (enough information) to make an identification?'). See Table 1 for a complete list of witness and investigator questionnaire items. After completing the questionnaires participants were debriefed and the testing session concluded.

Results

Study 1 was a three viewing condition feedback (good, poor or no information) \times 2 line-up feedback (positive ID feedback or no feedback) between-subjects design. This results section is divided into two subsections: (a) results of the witness questionnaire, and (b) results of the investigator questionnaire. Within each of these subsections the influence of both viewing condition and line-up feedback is discussed.

Conceptually, the items on the witness and investigator questionnaires reflected two constructs, items relating to the accuracy of the witness's ID decision and items relating to the quality of the witness's viewing condition. Thus, independent MANOVAs were run on each subset of items that were grouped theoretically. ID items tapped the

witness's or investigator's impressions of the ID decision making process (e.g. ease and speed of ID) as well as his/her faith in the witness's ID decision (e.g. certainty in the ID, willingness to testify in court). Viewing condition items assessed the witness's or investigator's perceptions of the witness's viewing conditions (e.g. distance between the perpetrator and the camera, ability to make out the features of the perpetrator's face). See Table 1 for those items considered ID items and those items considered viewing condition items.²

Witness Questionnaire. Two two-way factorial MANOVAs were conducted on the 'ID' and 'viewing conditions' questionnaire items. The multivariate significance of the tests was assessed by follow-up univariate analyses.

ID items. Witness questionnaire ID items 1, 2, 3, 4, 5, 6, and 7 were tested in the first MANOVA. As predicted, no significant multivariate effects were found for the viewing condition \times line-up feedback interaction, $F(14, 310) < 1$ nor for viewing condition feedback, $F(14, 310) < 1$. However,

²Additional analyses tested whether gender influences participant-witnesses' and -investigators' reporting. We explored if participants' reporting varied with: (i) the consistency of the gender of the witness-investigator dyad (same gender vs. different gender pair) and (ii) the gender of the investigator (male vs. female). We conducted MANOVAs that analysed the same DVs as the MANOVAs discussed in Study 1 (i.e., witness ID items, witness view items, investigator ID items, and investigator view items). The first group of 4 MANOVAs were 3 (viewing condition: good, poor, or no information) \times 2 (line-up feedback: positive or no feedback) \times 2 (gender consistency: same or different) analyses and the second group of 4 MANOVAs were (viewing condition: good, poor, or no information) \times 2 (line-up feedback: positive or no feedback) \times 2 (investigator gender: male or female). Findings of these multivariate gender analyses revealed largely non-significant results (only one significant multivariate three-way interaction and one significant multivariate two-way interaction; these interactions only revealed one significant finding at the univariate level). Thus, we conclude that gender did not influence participants' reporting in a systematic way.

witnesses' responses to the items querying the witness' ID were significantly affected by the type of feedback they received about their line-up performance, $F(7,154) = 9.54$, $p < .001$, partial $\eta^2 = 0.30$, Pillai's Trace = 0.30.

The follow-up ANOVA results indicate which of the seven dependent variables were independently significantly affected by line-up feedback. To adjust for multiple tests, the univariate effects were evaluated at the $\alpha = 0.05/7 = 0.007$ level of significance.

The significant effect of line-up feedback can be seen on five of the seven items, questions 1, 2, 3, 5 and 7, [F 's (1, 160) ≥ 14.34 , p 's $< .007$, partial η^2 's ≥ 0.08]. See Table 1 for descriptive statistics. Consistent with previous research, participants receiving positive post-ID feedback provided ratings indicative of greater certainty in their ID performance, that is, they were more confident in the ID (item 1, Cohen's $d = 0.81$), indicated they selected the culprit from the line-up with greater ease (item 3, Cohen's $d = 1.04$), had a better basis to make an ID (item 2, Cohen's $d = 0.68$), had a clearer image of the culprits face (item 7, Cohen's $d = 0.52$), and had an enhanced willingness to testify (item 5, Cohen's $d = 0.74$). Two of the seven questions assessing witnesses' ID decisions did not contribute to the multivariate effect of ID feedback. These were how quickly the witness reported making his/her ID (Item 4) and the general strength of his/her recognition memory (Item 6), [F 's (1, 160) ≤ 6.41 , p 's $> .007$, partial η^2 's ≤ 0.03].

Viewing condition items. The second witness questionnaire MANOVA used the items assessing the witness's viewing condition, specifically items 11, 12, 13 and 14. As predicted, no significant multivariate effects were found for the viewing condition \times line-up feedback interaction, $F(8, 306) = 1.37$, $p > .05$. The witnesses' questionnaire responses to the viewing condition items were significantly affected by the type of information they received about their viewing conditions, $F(8, 306) = 4.24$, $p < .001$, partial $\eta^2 = 0.10$, Pillai's Trace = 0.20, and their line-up performance feedback, $F(4, 152) = 4.63$, $p < .01$, partial $\eta^2 = 0.11$, Pillai's Trace = 0.11.

The univariate effects of viewing condition were evaluated using $\alpha = 0.05/4 = 0.01$. Significant univariate effects were found for two questions: how good a view the witness had of the man who planted the bomb (item 11), $F(2, 155) = 16.03$, $p < .01$, partial $\eta^2 = 0.17$, and the witness's ability to make out features of the culprit's face (item 12), $F(2, 155) = 5.44$, $p < .01$, partial $\eta^2 = 0.07$. Tukey's post hoc analyses for the item 11 means revealed that those witnesses in the poor view condition reported having had a significantly worse view of the culprit ($M = 6.42$, $SD = 2.01$) compared to those with a good view ($M = 8.21$, $SD = 1.55$, Cohen's $d = 1.00$), and those in the control condition ($M = 7.84$, $SD = 1.66$, Cohen's $d = 0.23$). For item 12, witnesses with a poor view reported that they were not as able to see the culprit's features ($M = 5.47$, $SD = 2.26$) compared to those with a good view ($M = 6.68$, $SD = 1.99$, Cohen's $d = 0.57$). Control condition did not differ from good and poor view ($M = 6.31$, $SD = 1.85$). Univariate results of the other two questionnaire items yielded non-significant results [F 's (2, 155) ≤ 0.15].

The effect of line-up feedback was observed on items 11 and 12 as well (see Table 1). Specifically, those receiving positive line-up feedback felt that they had a better view of the culprit and a better ability to make out features of the perpetrator's face than those who received no feedback [F 's (1, 155) ≥ 9.54 , p 's $< .01$, partial η^2 's ≥ 0.06 , and Cohen's d for these two items were 0.49 for item 11 and 0.60 on item 12. Two questions not influenced by ID feedback were: the amount of attention the witness paid to the suspect's face (item 13) and the camera's distance from the perpetrator (item 14), [F 's (1, 155) ≤ 3.81 , p 's $> .01$].

In sum, the finding of the two MANOVAs performed on the witness questionnaire demonstrates no viewing manipulation \times line-up feedback interaction for either the viewing condition items or ID items. The viewing condition manipulation had no effect on the ID items and influenced witnesses' reporting on 2 of the 4 viewing condition items: the view that they had of the perpetrator and their ability to make out the features of the perpetrator's face. Line-up feedback, on the other hand, had a more robust effect, influencing 5 of the 7 ID items as well as 2 of the 4 viewing condition items. In addition, the effects sizes of line-up feedback were moderate to strong (ranging from 0.52 to 1.04 on the ID items and from 0.49 to 0.60 on the 2 view items). Consistent with previous research, participant-witnesses receiving positive line-up feedback provided ratings indicative of greater confidence in their ID performance. Participant-witnesses receiving positive line-up feedback also reported superior viewing conditions, that is witnesses rated their view of the perpetrator as better and indicated greater ability to make out the culprit's features.

Investigator Questionnaire. The investigator questionnaire asked participant-investigators about their perceptions of the witnesses' abilities. Again, two two-way MANOVAs were conducted, one on ID items and the other on viewing condition items.

ID items. The first MANOVA used the 6 ID items (items 1, 2, 3, 4, 5 and 7) on the investigator questionnaire. No significant multivariate effects were found for the viewing condition \times line-up feedback interaction, $F(12, 310) = 1.75$, $p > .05$, nor for the viewing condition information main effect, $F(12, 310) = 1.52$, $p > .05$. Pillai-Bartlett Trace (Pillai's Trace = 0.32) revealed a significant multivariate effect of line-up feedback, $F(6, 154) = 12.02$, $p < .001$, partial $\eta^2 = 0.32$. Thus, follow-up univariate effects were assessed using an alpha level of 0.008 ($\alpha = 0.05/6$).

The multivariate effect of line-up feedback produced a result of five significant univariate findings on items 1, 2, 3, 5 and 7 [F 's(1, 165) ≥ 18.21 , p 's $< .008$, partial η^2 's ≥ 0.10]. Furthermore, these effects were strong. Results demonstrated the predicted pattern as investigators showed greater certainty in witnesses who received positive line-up feedback (see Table 1, middle columns, for item means and standard deviations). To illustrate, investigators reported that with positive feedback they had a greater certainty in the witness's ID (item 1, Cohen's $d = 1.24$) and that they would be more inclined to recommend the witness testify in court (item 5, Cohen's $d = 0.92$). Positive line-up feedback also led

investigators to report that the witness had a better basis for making an ID (item 2, Cohen's $d = 0.82$), and that making the ID was easier for the witness (item 3, Cohen's $d = 0.91$), and that the witness had a clearer image of the perpetrator in their memory (item 7, Cohen's $d = 0.61$). The only ID item not significantly influenced by line-up feedback asked investigators to estimate, on a 10-point Likert scale ranging from 'almost no time' to 'had to think about the line-up for a long time', the amount of time it took the witness to identify the culprit (item 4), $F(1,165) = 6.18$, $p = .01$, partial $\eta^2 = 0.04$.

Viewing condition items. The second MANOVA utilized the four viewing condition items on the investigator questionnaire (items 11, 12, 13 and 14). No significant viewing condition \times line-up feedback interaction was found, $F(8, 314) = 0.99$, $p > .05$. Pillai–Bartlett Trace revealed significant multivariate results for both manipulated viewing condition [$F(8, 314) = 6.61$, $p < .001$, partial $\eta^2 = 0.14$, Pillai's Trace = 0.29] and line-up feedback [$F(4, 156) = 5.36$, $p < .001$, partial $\eta^2 = 0.12$, Pillai's Trace = 0.12].

The multivariate effect of manipulated viewing condition on the viewing condition items is clarified by the univariate effects on 3 of the 4 questionnaire items (with alpha again adjusted to $0.05/4 = 0.01$). These items queried investigators about the witness's view of the culprit (item 11), ability to interpret features of the culprits face (item 12), and the camera's distance from the culprit (item 14), [F 's (2, 159) ≥ 6.78 , p 's $< .01$, partial η^2 's ≥ 0.08]. Overall, we see that information about a poor viewing condition was more influential than information about a good viewing condition.

Investigators working with witnesses in the poor viewing condition reported that witnesses had a worse view of the suspect ($M = 4.98$, $SD = 2.47$) than those in good view ($M = 7.82$, $SD = 2.00$, Cohen's $d = 1.26$), and control view condition ($M = 6.85$, $SD = 2.16$, Cohen's $d = 0.81$). Those with the poor view were reported to be further from the perpetrator ($M = 5.46$, $SD = 2.19$) than those in the good view condition ($M = 4.23$, $SD = 2.18$, Cohen's $d = 0.56$), and control view condition ($M = 4.13$, $SD = 2.05$, Cohen's $d = 0.63$). In addition, investigators in the poor viewing condition felt that the witnesses were not as able to make out the features of the suspect's face ($M = 4.50$, $SD = 2.45$) compared to those in the good view condition ($M = 6.29$, $SD = 2.26$, Cohen's $d = 0.76$). Participants in the control view condition did not differ from those with a good or poor view.

All four viewing condition items were also significantly influenced by the line-up feedback received by the investigator [F 's (1, 159) ≥ 8.95 , p 's $< .01$, partial η^2 's ≥ 0.05]. Results demonstrated the predicted pattern as investigators showed greater confidence in witnesses who received positive line-up feedback (see middle columns in Table 1 for descriptive statistics for participant-interviewers). When investigators learned the witness received positive feedback they reported that the witness had a better view (item 11, Cohen's $d = 0.45$), was closer to the perpetrator (item 14, Cohen's $d = 0.56$), was paying closer attention to the culprit's face (item 13, Cohen's $d = 0.52$), and were more effective at distinguishing the features of the

perpetrator's face (item 12, Cohen's $d = 0.48$) than those in the no information ID feedback condition.

In sum, as was the case with the participant-witnesses, the results of the two MANOVAs performed on the investigators' responses demonstrate no significant multivariate viewing condition \times line-up feedback interaction on either the viewing condition items or the ID items. Compared to witness reporting, however, investigators demonstrated main effect differences on more questionnaire items as a function of both viewing condition information and line-up feedback. Viewing condition information influenced 3 of the 4 viewing condition items, the view they had of the perpetrator, their ability to make out the features of the perpetrators face, and the camera's distance from the culprit. Line-up feedback influenced 5 of the 6 ID items and all 4 of the 4 viewing condition items. Overall, line-up feedback led investigators to be more confident in the witnesses' viewing conditions as well as their ID performance.

Discussion

Study 1 explored how post-ID feedback and viewing condition information influenced witnesses' and investigators' impressions of the quality of the witness and the testimony (s)he provided during the post-ID interview.

Viewing Conditions and Post-ID Feedback Effect: Witnesses. Consistent with previous research, we found that positive post-ID feedback led to higher questionnaire ratings on the majority of items querying viewing conditions and items relating to the accuracy of the witness's ID decision. Witnesses who received positive feedback had greater certainty in their ID, felt that they had a better basis for making an ID and greater ease in selecting the perpetrator from the line-up, were more willing to testify in court, had a clearer image of the culprit's face, had a better quality of view of the man who planted the bomb, and a greater ability to make out the features of the perpetrators face. Recall that all of the witnesses had incorrectly chosen a foil from the line-up.

It was noted in a recent meta-analysis of the post-ID feedback effect (Douglass & Steblay, 2006) and explored in detail by Douglass, Brewer, and Semmler (2010) that seemingly objective measures of the witnesses experience (i.e. time perpetrator in view, distance from the camera) produce smaller effect sizes and no statistically significant differences (Douglass & Steblay, 2006). Consistent with this finding was our result that positive feedback did not significantly alter participant-witnesses' reports of the time it took them to make their ID and the camera's distance from the perpetrator.

As anticipated, our view manipulation did not interact with post-ID feedback. Additionally, only two of the eleven items on the witness questionnaire were influenced by our viewing condition manipulation. Specifically, compared to participant-witnesses in the good and no information view conditions, witnesses with a poor view reported that they had an inferior quality of view of the man who planted the bomb and had a worse ability to make out the features of the culprit's face. Indeed, this is consistent with our pilot findings that demonstrate that participants, seated in the 'poor view

chair' and given no verbal feedback about their view, felt that they had a worse view of the perpetrator than those in the good view condition.

Witnesses in our good view condition were positioned the same distance from the crime as witnesses in the control condition. Our methodology was such that the experimenter informed participants in the good view condition that they had a good view of the crime whereas those in the no information view received no feedback about their viewing condition. If participants were malleable to the power of suggestion we would expect those told that they had a good view to have higher certainty than those who sat the same distance from the monitor but heard no labelling of their view as 'good', but this was not the case. Ratings of participants in the control and good view conditions were not different from one another, rather they were both significantly different from ratings of participants who sat further from the monitor (poor view). Thus, these findings suggest that participant-witnesses drew on their viewing *experiences* rather than the *verbal information* from the experimenter when making their judgements.

Viewing Conditions and Post-ID Feedback Effect: Investigators. The central question of this research was how knowledge of the witness's view and line-up ID affects the investigator's assessment of the witness. Results suggest that investigators formed more favourable impressions of witnesses who purportedly identified the suspect. Post-ID feedback produced significant differences on 9 of the 10 witness appraisal items completed by investigators. Positive line-up feedback generally led investigators to conclude that they were working with a 'better witness' relative to the no feedback control. Investigators working with witnesses who had a poor view of the crime judged the witnesses as having had a worse view of the suspect and were not as close to the perpetrator as compared to witnesses in the good and no information viewing conditions. Investigators dealing with witnesses in the poor view condition also judged the witnesses as less able to make out the features of the suspect's face compared to witnesses in the good view condition. These results mirror the ratings witnesses provided of the quality of their view and their ability to discern features of the suspect's face (higher ratings in the good view and no information conditions relative to the poor view condition).

Study 1 illuminates how perceptions of witnesses and investigators can be influenced by information about witness view and a line-up administrator's assertion that the witness identified the suspect. Our path of inquiry next advances to focus on the investigative interview where we explore the possibility that *a priori* knowledge can shape investigators' questioning and witnesses' crime reports. In essence, Study 1 forges the first link in a potential chain of bias in crime investigation – from witnesses and investigators to third party observers.

STUDY 2

Study 2 shifts perspective to the investigative interview. This study addresses whether our manipulations of view and

line-up feedback affect the witness-investigator interplay such that qualitative differences would be discernible to third party observers. Employing the two-experiment procedure introduced by Wells, Lindsay, and Ferguson (1979), we had a new sample of participants view the videotaped participant-investigator/witness interviews from Study 1. After viewing the interviews, these third party observers, which we refer to here as evaluators, were asked to indicate their impression of the witness on a questionnaire with items that paralleled the questionnaires given to witnesses and investigators in Study 1. Evaluators in Study 2 were not explicitly provided with information about the viewing condition or line-up feedback given to the witness and investigator in Study 1; rather their experience with these variables could come only through observable aspects of the interaction between the investigator and the witness. In the interview, witnesses answered questions about what happened during the criminal event, reported their confidence in their ID, and their impressions of their viewing conditions.

In a similar experiment, Douglass, Neuschatz *et al.* (2010) provided participant-witnesses with post-ID feedback and these participants engaged in a videotaped interview with an experimenter. The researchers selected a subset of six interviews, two that represented each of the three feedback conditions, to be shown to evaluators. Each evaluator viewed either a confirmatory feedback (confidence 80–90%), a disconfirming feedback (confidence 10%) or a control condition (confidence 50%) interview. Findings reveal that evaluators viewed the witness more favourably (more accurate, etc.) when they had received confirmatory post-ID feedback compared to disconfirmatory or control feedback. We recognize the similarities that our research has with Douglass, Neuschatz *et al.*'s (2010) procedure, however, the stimuli we provided to our evaluators differed in two important ways.

First, our evaluators watched an interview in which both the witness and the investigator were participants, using their own words and style of speaking as they interacted with one another. Our approach permits an examination of how the investigator's *a priori* assessment of the witness steers that investigator's navigation of the interview. Second, to allow investigator beliefs to manifest in questioning style and tactics, participant-investigators were provided with interview *guidelines* which outlined objectives for the interview rather than a firm set of interview questions to be read verbatim. Investigators had to choose their words to develop questions to the witness and they were given free reign to give feedback to witnesses and ask follow-up questions during the course of the interview. We were interested in capturing rather than controlling the variation our procedure invited to the form and process of the post-ID interviews. In videotaping the interviews, we sought to record any discernible differences in the 'testimonies' of witnesses as a function of the manipulations introduced in Study 1. By showing the testimonies to a new sample of participants playing the role of evaluators, we could assess whether the Study 1 manipulations ultimately affected perceptions of the credibility of participant-witnesses' crime reports.

We expected to see the information about view and ID decision provided to participants in Study 1 seep into the witness-investigator interaction and produced discernible differences in the witnesses' crime reports, thus ultimately influencing third party observers' impressions of the witnesses' 'testimonies'. This two-experiment procedure provides us with the opportunity to move beyond participants' self-report measures and explore how our manipulations affect the dynamic process of communication between investigator and witness in the investigative interview and how this interaction is perceived by third party observers.

Method

Stimulus material, participants, and design

One hundred and fifty-one videotaped witness-investigator interviews from Study 1 were used as stimulus material in Study 2. Subjects participated in pairs, thus, 302 undergraduate university students (80 male and 220 female)³ participated for course credit. Participants' ages ranged from 17 to 43 ($M = 19.65$, $SD = 3.06$). Only videos that had the consent of both the participant witness and investigator were shown to the pairs of third party observers in Study 2. Each pair of participant-evaluators watched one video of a witness-investigator interaction. The videos encompassed one of six conditions, formed by factorially combining one of the three viewing condition manipulations, that is good view ($n = 52$), poor view ($n = 50$), or no information view ($n = 49$) and the two line-up feedback conditions, that is positive ($n = 73$) or no feedback ($n = 78$) provided in Study 1.

Procedure

Upon arrival two participant-evaluators were seated together in front of a television monitor. After signing a consent form, participants were told by the experimenter that they were to watch a video of a witness to a simulated crime and complete a questionnaire. The questionnaire was distributed and the experimenter began the tape. Participants typically waited until the interview was complete to fill in the questionnaire but they were free to complete it at any time during the experiment. The questionnaire contained a total of 12 questions, the first 9 of which paralleled the content in both the witness questionnaire and the investigator questionnaire from Study 1 (see Table 1 for Study 2 questionnaire items). Unique to the evaluators' questionnaire were three questions that asked these participants to rate the witness's accuracy and credibility, as well as their willingness to convict the suspect. These questions were asked at the end of the questionnaire. The experiment ended with the experimenter collecting the evaluators' questionnaires and debriefing participants.

Results

Study 2 employed the same statistical analyses as Study 1. Two 3 (viewing condition feedback: good view, poor view, or no information view) \times 2 (line-up feedback: positive ID

feedback or no feedback) MANOVAs were performed on the data. The first MANOVA included all items that queried elements of the witness's identification decision (e.g. how certain are you that the man the witness identified was the man who planted the bomb?). The second MANOVA included all the items which queried the witness's viewing conditions (e.g. how good a view do you think the witness got of the man who planted the bomb?). Please see Table 1 for those items considered ID items and those items considered viewing condition items. Presented below are the results of the ID item MANOVA and the viewing condition item MANOVA.⁴

ID items Eight items on the evaluator questionnaire pertained to the evaluator's confidence in the witnesses ID performance. These items asked evaluators to rate the witness's basis for making an ID (item 2), the ease with which (s)he made the ID (item 3), the amount of time it took him or her to make the ID (item 4), and the clarity of memorial image the witness had of the culprit's face (item 7). ID items also asked observers to rate the credibility (item 10) and accuracy (item 8) of the witness's testimony as well as their confidence that the witness identified the culprit (item 1) and their willingness to convict the suspect from the witness's ID (item 9). Pillai-Bartlett Trace (Pillai's Trace = 0.11) revealed significant multivariate results for the main effect of line-up feedback $F(8, 136) = 2.01$, $p = .05$, partial $\eta^2 = 0.11$ and the viewing condition \times line-up feedback interaction, $F(16, 274) = 1.72$, $p < .05$, partial $\eta^2 = 0.09$, (Pillai's Trace = 0.18). Non-significant multivariate effects were found for viewing condition information, $F(16, 274) = 0.87$, $p > .05$, partial $\eta^2 = 0.05$.

The multivariate effect of line-up feedback can be seen in the significant univariate main effects of 3 of the 8 ID questions. The evaluators viewing investigators and witnesses who had received positive feedback about the witness's ID decision were significantly more certain than those who received no information that the witness identified the culprit [item 1; $F(1, 143) = 14.89$, $p < .006$, partial $\eta^2 = 0.09$, and Cohen's $d = 0.64$] and that the witness had a good basis for making the ID [item 2; $F(1, 143) = 8.48$, $p < .006$, partial $\eta^2 = 0.06$, Cohen's $d = 0.51$]. In addition, observers viewing those who received positive feedback were more willing to convict the suspect based on the witness's ID [item 9; $F(1, 143) = 8.13$, $p < .006$, partial $\eta^2 = 0.05$, Cohen's $d = 0.49$]. No significant univariate differences were found on the other 5 ID items, F 's (1, 143) < 7.28 , p 's $> .006$, partial η^2 's < 0.05]. See right-hand side columns in Table 1 for descriptive results. No univariate

⁴Additional analyses tested the influence of gender on participant-evaluators' reporting. We explored if participants' reporting varied with: (i) the consistency of the gender of the witness-investigator dyad in the interview (same gender vs. different gender pair) and (ii) the gender of the investigator (male vs. female). We conducted MANOVAs that analysed the same DVs as the MANOVAs discussed in Study 2 (i.e. evaluator ID items and evaluator view items). The first group of 2 MANOVAs were 3 (viewing condition: good, poor, or no information) \times 2 (line-up feedback: positive or no feedback) \times 2 (gender consistency: same or different) analyses and the second group of 2 MANOVAs were (viewing condition: good, poor, or no information) \times 2 (line-up feedback: positive or no feedback) \times 2 (investigator gender: male or female). Findings revealed that the gender variables produced no significant variation in participant-evaluators' reporting.

³Two participants did not report their gender.

analyses reached the $p = .006$ ($0.05/8 = 0.006$) for the viewing condition \times line-up interaction.

Viewing condition items Four items assessed the evaluators' impressions of the witnesses' viewing condition. These items queried how good a view the witness had of the man who planted the bomb (item 11), the distance between the camera and the perpetrator (item 14), the amount of attention the witness was paying to the culprit's face (item 13), and the witness's ability to make out the culprit's features (item 12). Once again, line-up feedback demonstrated a significant multivariate main effect $F(4, 142) = 2.47$, $p < .05$, partial $\eta^2 = 0.07$. No significant multivariate effect was found for main effect of viewing condition [$F(8, 286) = 1.23$, $p > .05$] or the viewing condition \times line-up feedback interaction [$F(8, 286) = 0.40$, $p > .05$].

Follow-up univariate significance was determined at $p = .01$ ($0.05/4 = 0.01$) for the main effect of line-up feedback. Only one of the four viewing condition items reached univariate significance, specifically; evaluators viewing witnesses in the positive line-up feedback condition felt that the witness had a better view of the man planting the bomb ($M = 6.16$, $SD = 1.75$) compared to those in the no feedback condition ($M = 5.38$, $SD = 1.61$), $F(1, 145) = 8.12$, $p < .01$, partial $\eta^2 = 0.05$ and Cohen's $d = 0.46$. No significant univariate differences were found on the other three viewing condition items, F 's ($1, 145$) < 4.02 , p 's $> .01$].

Thus, the line-up feedback manipulation produced significant results on 4 of the 12 items asked of third party evaluators. Comparing observers who viewed witnesses in the 'no feedback' condition, observers viewing witnesses who had received positive line-up feedback were more certain that the witness identified the culprit, had a good basis for making their ID, had a good view of the man planting the bomb, and that the identified offender should be convicted. Viewing condition did not significantly influence third party ratings.

In summary, our findings from Study 1 and Study 2 demonstrate that line-up feedback had a reliably stronger effect on witnesses', investigators' and evaluators' reporting compared to viewing condition information, particularly on the ID items. Table 2 summaries the inferential and descriptive statistics from Study 1 and Study 2 to highlight this finding.

The Interview Findings from Studies 1 and 2 demonstrate the significant influence of post-ID feedback on witnesses', investigators', and to a lesser extent, evaluators' questionnaire responses. The set of videotaped interviews from Experiment 1 provided not only stimulus material for Experiment 2 but were also a unique set of data for us to explore.

A rich history in social psychology demonstrates the power of demand characteristics on witness reporting (e.g. Loftus & Palmer, 1974; Weinberg, Wadsworth, & Baron, 1983) and the influence of a questioner's preconceived notions in the interview (e.g. Garrioch & Brimacombe, 2001; Meissner & Kassin, 2004; Snyder & Swann, 1978). Research illustrates that preconceived opinions can guide questioners to seek information that supports their beliefs (Meissner & Kassin, 2004). Research also demonstrates that witnesses exposed to the subtle demands of a biased questioner may conform their reporting and recall to what seems to be expected of them (Garrioch & Brimacombe, 2001; Loftus & Palmer, 1974).

The current research affords a new perspective on the power of preconceived ideas on witness reporting. Whereas previous studies have focused exclusively on the power of the interviewer to shape a witness's beliefs, confidence, and testimony, the current studies created a situation where preconceived notions were instilled in both interviewer and witness. The interview between investigator and witness thus gave opportunity for bias to flow in two directions: investigators' beliefs shaping witnesses' responses and witnesses' beliefs shaping investigators' appraisals, ques-

Table 2. MANOVA results: significant effects of ID feedback and viewing condition information

	ID items				Viewing items			
	Significant	Partial η^2	Number of significant items in follow-up ANOVA	Range of Cohen's d s for significant individual items	Significant	Partial η^2	Number of significant items in follow-up ANOVA	Range of Cohen's d s for significant individual items
Witnesses								
View	.592	0.038	N/A	N/A	.000	0.100	2	0.19–0.77
Line-up	.000	0.302	5	0.52–1.04	.001	0.109	2	0.49–0.60
View X								
Line-up	.185	0.057	N/A	N/A	.202	0.035	N/A	N/A
Investigators								
View	.115	0.056	N/A	N/A	.000	0.144	3	0.05–0.81
Line-up	.000	0.319	5	0.61–1.24	.000	0.121	4	0.45–0.56
View X								
Line-up	.056	0.063	N/A	N/A	.443	0.025	N/A	N/A
Evaluators								
View	.610	0.048	N/A	N/A	.279	0.033	N/A	N/A
Line-up	.050	0.106	3	0.49–0.64	.048	0.065	1	0.46
View X								
Line-up	.042	0.092	0	N/A	.922	0.011	N/A	N/A

tions, and interpretations of the witnesses' responses. Thus, our analysis considered how interviewer questioning and witness responding related to our post-ID feedback manipulations.

In adopting this non-scripted approach, we intentionally invited variation into our post-identification interviews. We expected that interviewers might adopt different questioning strategies depending on whether the witness identified the suspect (e.g. asking for a confidence statement in a leading manner if the witness supposedly identified the suspect). And we recognised that witnesses might shape the course of the investigation by virtue of the information they had received about their identification decision (e.g. exhibiting a stronger sense of confidence when asked to describe the perpetrator if they believed they had correctly identified the suspect).

Post-ID feedback influenced all three groups of participants' (witnesses, investigators and evaluators) ratings of identification confidence (item 1). To illuminate how post-ID feedback manipulated evaluator reporting, we scrutinized the dialogue between witnesses and investigators on the subject of confidence in identification decisions. To do this two research assistants (blind to experimental condition) scored 2 facets of communication in the witness-investigator interviews (1) how the interviewer asked the witness about his or her ID confidence, and (2) the witness's confidence in his or her ID. To begin, each rater independently scored the same set of 31 interviews from the complete set of 151 interviews (20%) using a common set of rules. The subset of interviews were randomly selected from the various experimental conditions. The duo then compared their finding on the 31 interviews. Inter-rater consistency was 77% agreement for categorization of how the investigators' asked witnesses' for their confidence and 81% agreement for the level of confidence demonstrated by the witness. Although extremely few, any disagreements were resolved together, using a common interpretation of the definitions and rules. The remaining interviews were scored independently by one rater.

Not surprisingly, we observed considerable variation in questioning styles in our set of interviews. We assessed if the investigator asked the witness about his/her ID decision in a leading positive, leading negative or non-leading fashion. We defined a leading positive question as a query that suggests to the witness that (s)he should be confident in his/her ID decision, for example 'so you are pretty confident in the choice you made?'. A leading negative question was defined as a query that suggests to the witness that (s)he should be unconfident in his/her ID decision, for example 'you weren't fully confident about that?'. Non-leading questions were non-partisan and did not guide the witness to be confident or unconfident in his/her line-up decision, for example 'how confident are you in the decision that you made?' or 'are you confident in your ID decision?'.

As shown in Table 3 approximately half of investigators chose to question the witness in a leading fashion (73/150 or 48.7%) rather than non-leading (51.3%). To test whether type of question differed in the two feedback conditions, chi square analysis revealed that line-up feedback did affect how investigators asked the witness for their confidence judgments, $X^2(2, N = 150) = 9.09, p < .05$. Participant-investigators were equally likely to use non-leading questions in

Table 3. Interview results: number of investigators in each feedback condition using each of type of leading question

	Type of question		
	Leading +	Leading -	Non-leading
Positive ID feedback (N = 71)	33	2	36
No ID feedback (N = 79)	25	13	41

both the no information line-up feedback condition (41/79 or 51.9% of questions asked) and the positive line-up feedback condition (36/71 or 50.7% of questions asked). However, they were more likely to use positive leading questions in the positive feedback condition (33/71 or 46.5% of all questions) than in the no feedback condition (25/79 or 31.6%). Thus, the difference between the positive ID feedback and no feedback conditions was not *if* they asked a leading question but rather *how* they asked their leading questions. Considering only the subset of participant-investigators who asked leading questions (35 in the positive and 38 in the no feedback conditions), we see that with positive feedback, 94% of these investigators used a positively leading question compared to 65.8% in the no feedback condition ($X^2(1, N = 73) = 9.09, p < .05$).

Follow-up to our analysis of how participant-investigators asked their questions was an assessment of the confidence with which witnesses reported their ID decisions. As we did not instruct investigators to obtain a numerical estimate of the witnesses' confidence, we received a variety of response formats and opted to categorize the responses as communicating either low, medium or high confidence. Numerically, witnesses stating they were 0–50% confident were categorized as low, 51–75% medium, and 76–100% high. The majority of participants did not use percentages to report their confidence rather they used descriptors. Thus, terms such as 'not very' or 'not really' were categorized as low, terms like 'pretty' and 'fairly' were categorised as medium, and 'extremely' and 'very' were considered strong. Our analysis of witnesses' responding demonstrated the predicted results. Frequencies are shown in Table 4. Of the 76 witnesses in the no information feedback condition the greatest proportion of them reported low confidence in their ID decision (37/76 or 49%) followed by moderate confidence (34%) and high confidence (17%). Conversely, of the 70 witnesses receiving positive feedback, the greatest proportion demonstrated high confidence in their identification (50%), followed by moderate confidence (34%) and low confidence (16%), $X^2(2, N = 146) = 24.042, p < .001$.

Table 4. Interview results: number of investigators in each feedback condition and each level of witness confidence

	Witness confidence		
	Low	Medium	High
Positive ID feedback (N = 70)	11	24	35
No ID feedback (N = 76)	37	26	13

Discussion

Viewing Conditions and Post-ID Feedback Effect: Evaluators

Study 2 investigated how post-ID feedback affects third party observers' perceptions of witness credibility. Observers watched the investigator-witness interviews from Study 1 and rated the quality of the witnesses' crime recollections and ID experience. The viewing condition information held by witnesses and investigators had no effect on evaluators' ratings in Study 2. However, consistent with Douglass, Neuschatz *et al.* (2010), post-ID feedback produced measurable differences in evaluators' assessments of witnesses' testimonies. Evaluators viewing witness-investigator dyads who had received positive line-up feedback were more confident that the witness IDed the culprit, had a good basis for making the ID, and had a good view of the man planting the bomb than evaluators viewing dyads who had received no information. Furthermore, positive line-up feedback led participant evaluators to report that the IDed person should be convicted.

These findings from participant evaluators demonstrate the power of post-ID feedback. Observers, with no explicit knowledge of the line-up feedback, demonstrated discernable differences in their appraisal of the quality of the witness. Of particular interest is that observers who viewed dyads that received positive line-up feedback *did not* report that witnesses were more accurate or credible, but were more willing to convict the suspect. This is the true power of post-ID feedback; positive feedback successfully manipulated evaluators' ratings which resulted in the ultimate decision to convict.

Viewing Conditions, Post-ID Feedback, and the Investigative Interview. We scrutinized two facets of communication in the witness-investigator interviews (1) how the interviewer asked the witness about his or her ID confidence, and (2) the witness's confidence in his or her ID. The shared knowledge of the participant-investigator and witness provided a novel approach revealing how prior knowledge moulds social interaction. Results demonstrate that our manipulations did not influence *whether* participant-investigators would ask a leading question, but rather *how* they asked their leading questions. Investigators who received positive line-up feedback asked mostly positively leading questions (94%) rather than negatively leading (6%). Alternatively, no line-up feedback reduced investigators' reliance on positive leading questions to 64%. Thus, our investigators sought information that was consistent with their preconceived notion of the witnesses' performance, a finding demonstrated consistently in the social influence literature (Meissner & Kassin, 2004; Snyder & Swann, 1978).

As predicted, line-up feedback altered participant-witnesses' responses to investigator questioning. The greatest proportion of participants demonstrating low confidence received no line-up feedback and the greatest proportion of participants demonstrating high confidence received positive line-up feedback. Our methodology does not allow us to render the origin or direction of our manipulations' influence in the investigative interview but rather provides a fascinating snapshot of how line-up feedback can mould investigator questioning and witness responding.

GENERAL DISCUSSION

This research contributes to the substantial literature demonstrating the power of post-ID feedback to alter eyewitness confidence and crime reports. The research affirms that eyewitness view (as defined by distance from the crime) does not alter the 'power' of post-ID feedback effects. Consistent with previous research (e.g. Bradfield *et al.*, 2002; Lampinen *et al.*, 2007; Wells & Bradfield, 1998) we found that positive post-ID feedback ('Good you identified the suspect') raised eyewitness confidence and altered crime recollections in all witnesses (regardless of whether they had a good or a poor view).

The research makes a novel contribution in focusing on the interplay between investigator-witness interactions in cultivating post-identification feedback effects (evident in both witness testimonies as well as evaluators' assessments of testimony credibility). We manipulated both witnesses' and investigators' expectations about whether the witness had correctly identified the suspect and examined how those biased beliefs influenced the investigative interview and the testimony witnesses provided. Social cognition research has illuminated the process whereby an individual's expectations concerning another person can lead that individual to act in ways that cause the expectation to be fulfilled (e.g. Snyder & Swann, 1978). In line with the social psychology literature on self-fulfilling prophecies (e.g. Rosenthal, 2002), we found that investigators' beliefs played a role in shaping the interview process, encouraging confident, credible testimonies in response to leading questions, in instances where the witness had purportedly correctly identified the suspect. Investigators who believed their witness had correctly identified the suspect gave subtle cues signalling a confident stance should be adopted in responding (e.g. phrasing a request to the witness to assess their identification confidence with a prompt such as, 'So, you feel confident that you got it right?'). In turn, witnesses questioned by an investigator who believed they correctly identified the suspect, provided testimonies that were discernibly more credible to third party observers. We recognize that investigator expectations were not the sole source of influence during the investigative interview. In conditions where positive post-ID feedback was provided, both investigators and witnesses received that information before participating in the investigative interview. As noted previously, our experimental procedure provided opportunity for bias to first be instilled in both witness and investigator and then developed via dialogue between each investigator-witness pair. Future research concerned with isolating the power of investigator expectations within the investigative interview could give investigators knowledge of whether the witness purportedly identified the suspect but keep witnesses blind to that information.

Our results indicate that post-ID feedback effects can influence those judging the credibility of the witness (investigators and evaluators). Consistent with Douglass, Neuschatz *et al.* (2010) the current research demonstrated that post-ID feedback affects evaluators' impressions of witnesses. Our third party evaluators judging the testimony of witnesses who received positive line-up feedback were

more convinced that the witness correctly identified the culprit, had a good basis for making the ID, and had a good view of the man planting the bomb. Most importantly, they were more willing to convict the falsely identified suspect.

When reviewing our findings it is valuable to remember that every one of our participant-witnesses made an inaccurate identification from the photo line-up. However, their mean identification confidence rating was 62% (ranging from 53% no feedback to 71% positive feedback). The implications of these findings are sobering in considering cases of wrongful conviction where eyewitness evidence was the key factor in shaping juror opinion of suspect guilt.

Our findings support the recommendation that police line-ups should be administered by someone who does not know the identity of the suspect (e.g. Greathouse & Kovera, 2009). The argument for double-blind line-up administration is not new, in fact, it has been made by eyewitness researchers for over 20 years (Wells, 1988). Indeed the double-blind procedure has been effectively endorsed by the American Psychology-Law Society (Wells, Small, Penrod, Malpass, Fulero, & Brimacombe, 1998). Thus, in order to obtain a clean and non-leading interview we need to employ investigators blind to the suspect's identity (Wells, 1988; Wells et al., 1998).

Our findings illuminate the power of suggestion and the relevance of social cognitive theories to understanding the potential for bias in forensic investigation. Post-ID feedback influenced the manner of questioning during the investigative interview. The current research provides additional evidence of bias driven by investigative tunnel vision (Findley & Scott, 2006; Meissner & Kassir, 2004) and contributes to the groundswell of literature exploring witness evidence and investigator decision making (e.g. Boyce et al., 2008; Dahl et al., 2006, 2009; Lindsay, Nilsen, & Read, 2000). We raise the caution that the magnitude of investigator influence observed in our research may be greater in the real world where police officers bring the power of their authoritative position to the context of the investigative interview.

In sum, the current research further illuminates the biasing power of social influence in crime investigation. The simple statement, 'Good, you identified the suspect' can ignite a cascading train of bias toward tunnel vision and potential wrongful conviction.

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