

The Damaging Effect of Confirming Feedback on the Relation Between Eyewitness Certainty and Identification Accuracy

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The authors investigated eyewitnesses' retrospective certainty (see G. L. Wells & A. L. Bradfield, 1999). The authors hypothesized that external influence from the lineup administrator would damage the certainty–accuracy relation by inflating the retrospective certainty of inaccurate eyewitnesses more than that of accurate eyewitnesses ($N = 245$). Two variables were manipulated: eyewitness accuracy (through the presence or absence of the culprit in the lineup) and feedback (confirming vs. control). Confirming feedback inflated retrospective certainty more for inaccurate eyewitnesses than for accurate eyewitnesses, significantly reducing the certainty–accuracy relation (from $r = .58$ in the control condition to $r = .37$ in the confirming feedback condition). Double-blind testing is recommended for lineups to prevent these external influences on eyewitnesses.

In the course of a criminal trial, eyewitness identification testimony can provide compelling evidence against a defendant. However, an eyewitness identification is not merely an issue of recognition memory. Wells and Luus (1990), for instance, described how a police investigator conducting a lineup is similar to a researcher conducting a social psychology experiment. Just as experimenters can influence how research participants respond, police investigators can influence how eyewitnesses respond. For example, research has shown that the person conducting a lineup can influence witnesses to identify an innocent person (Phillips, McAuliff, Kovera, & Cutler, 1999) and influence witnesses' recollections of how confident they were when they made their identification (Wells & Bradfield, 1998, 1999). Our concern is with this latter problem: How do external social influences (e.g., a lineup administrator) affect a witness's recollections of how confident he or she was at some earlier point in time (i.e., *retrospective certainty*)?

In general, the susceptibility of eyewitnesses to social influence is an important issue because mistaken identifications are the largest single cause of wrongful convictions of innocent people (Rattner, 1988; Wells, Small, Penrod, Malpass, Fulero, & Brimacombe, 1998). In particular, the susceptibility of retrospective certainty reports to social influence is important because jurors are especially willing to accept eyewitness identification testimony when the eyewitness is certain about the identification (e.g., Cutler, Penrod, & Dexter, 1990; Fox & Walters, 1986; Wells, Fergu-

son, & Lindsay, 1981). The reliance on certainty reports to evaluate identification accuracy can be problematic because research suggests that, under some conditions, certainty and accuracy might each be controlled by different factors (Busey, Tunnicliff, Loftus, & Loftus, 2000; Leippe, 1980).

The relation between certainty and accuracy in eyewitness identification has been an issue of considerable concern to researchers for more than 20 years (e.g., Leippe, Wells, & Ostrom, 1978), and the literature has grown to yield a large database (e.g., see meta-analysis by Sporer, Penrod, Read, & Cutler, 1995). The certainty that an eyewitness expresses in his or her identification is the primary factor that determines whether triers of fact (e.g., judges, juries) will accept the eyewitness's testimony as proof that the identified person is the culprit (e.g., Wells et al., 1981). The extent to which eyewitness certainty is related to eyewitness accuracy, therefore, is critical to the problem of whether triers of fact will make appropriate decisions in evaluating the accuracy of a given eyewitness.

The Certainty–Accuracy Relation

We propose that the relation between eyewitness identification certainty and accuracy is not a single value but instead is a family of possible values. The magnitude of the certainty–accuracy relation in a given instance is moderated by external variables. In some cases, these other variables are not under the control of the justice system. For instance, poor viewing conditions at the time of witnessing seem to produce weaker certainty–accuracy relations than do good viewing conditions (Bothwell, Deffenbacher, & Brigham, 1987); the justice system cannot control witness viewing conditions. Also, high levels of coincidental similarity between the culprit and an innocent suspect lead to high certainty in identifications of the innocent suspect, thereby harming the certainty–accuracy relation (Lindsay, 1986). However, this type of similarity is a coincidental event that, almost by definition, is not under the control of the criminal justice system.

In the tradition of system variable eyewitness research (Wells, 1978), we are concerned primarily about variables that are under

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This research was supported by National Science Foundation Grant SBR 98-07339 awarded to Gary L. Wells. We thank Rana Fuller, Brandy Proulx, Alexis Lyman, Amy Schwering, Lindsay Hickle, Gina Buse, Jennifer Roach, and Nick Carnagey for their work as experimenters.

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the control of the justice system and that can harm the certainty–accuracy relation. The present research follows on the work of Wells and Bradfield (1999), who demonstrated that postidentification feedback (i.e., a comment from the lineup administrator suggesting that the identification was accurate) to eyewitnesses dramatically influenced their recollections of how certain they recalled being at the time of their identification (i.e., before getting the feedback). Feedback strongly affected certainty reports as well as reports of other testimony-relevant judgments (witnesses' recollections of their view, how much attention they paid to the video, the ease with which their identification was made, etc.).¹

Postidentification feedback is under the control of the justice system because it is usually given by the person who administers the lineup. That person, usually a detective, knows who the suspect is and, therefore, can give a witness information about the "accuracy" of his or her identification. Postidentification feedback clearly affects the retrospective certainty reports of inaccurate witnesses. However, its effect on the certainty–accuracy relation remains unclear because previous research used a paradigm in which all witnesses' identifications were inaccurate. If postidentification feedback inflates retrospective certainty for accurate eyewitnesses as much as it inflates retrospective certainty for inaccurate eyewitnesses, then any certainty–accuracy relation in no-feedback conditions would remain intact; a main effect of feedback on retrospective certainty does not change the magnitude of the certainty–accuracy relation. In contrast, if postidentification feedback inflates retrospective certainty for inaccurate eyewitnesses more than it inflates retrospective certainty for accurate eyewitnesses (an interaction effect), the strength of the certainty–accuracy relation would be diminished. We hypothesized that confirming feedback would inflate the certainty of inaccurate witnesses more than it would inflate the certainty of accurate witnesses, resulting in a weakening of the certainty–accuracy relation.

Why Might Feedback Differentially Affect Accurate Versus Inaccurate Witnesses?

Our hypothesis that confirming feedback would diminish the certainty–accuracy relation was based on the idea that people are more influenced by external cues when internal cues are weak than when internal cues are strong. A number of social psychological theories and phenomena rely on some version of this general idea. For example, Festinger's (1954) social comparison theory argues that people do not seek (i.e., are not influenced by) external comparison targets when their internal (i.e., objective) standards of comparison are held with certainty. In a similar manner, self-perception theory posits that people infer their attitudes from their behavior only to the extent that internal cues are weak or ambiguous (Bem, 1972). In addition, external influences on reconstructive memory are stronger if time passes (prior to the introduction of external-source misinformation), so that internal memory cues for the original event are allowed to fade (e.g., Loftus, Miller, & Burns, 1978). Finally, conformity to the majority opinion is weakened by making personal, internal standards salient (Gibbons & Wright, 1983). In general, the degree of influence of external factors on people's judgments should be inversely related to the strength of internal factors related to those judgments.

The idea that external influences are stronger when internal cues are weak than when internal cues are strong suggests a mechanism by which the effect of postidentification feedback should be different for accurate versus inaccurate eyewitnesses: *ephoric similarity*. Ephoric similarity is a subjective memory judgment that refers to the degree of perceived similarity between a stimulus and a person's memory (Tulving, 1981). Ephoric similarity is an important internal cue that can direct not only one's decision as to which of several stimuli were observed previously (recognition memory) but also how certain one is that a stimulus is in fact the one previously observed. Ephoric similarity varies in degree, depending on the extent to which the memory trace matches the stimulus. On the basis of this idea of ephoric similarity, eyewitnesses who have made accurate identifications should have stronger internal cues to their accuracy, and higher certainty, than should eyewitnesses who have made inaccurate identifications; the degree of match between memory trace (i.e., of the culprit) and stimulus (i.e., lineup member identified) is greater for accurate witnesses (because the identified stimulus is in fact the culprit) than for inaccurate witnesses (who have identified someone who is not the culprit). Certainty, then, is influenced by ephoric similarity as well as a host of other, external, variables (e.g., postidentification feedback).

If accurate witnesses have stronger internal cues (i.e., greater ephoric similarity) than do inaccurate witnesses, it stands to reason that postidentification feedback should have less influence on the retrospective certainty reports of accurate witnesses than on the retrospective certainty reports of inaccurate witnesses. Such a result would be consistent with evidence that increasing the strength of eyewitnesses' internal cues mitigates the influence of feedback. For example, Wells and Bradfield (1999) required some participants to think privately about their certainty before hearing feedback information. Participants who were directed to think privately about their certainty, before hearing feedback, were not influenced by feedback. The increased salience of an internal cue (recollections of prior thoughts) precluded witnesses from having to depend on an external cue (the feedback) for information about prior certainty; an internal cue, in effect, inoculated participants from the influences of postidentification feedback.

Manipulating the Accuracy of Eyewitness Identifications

In conducting our experiments, we did not want to confound witness characteristics with accuracy. Under identical witness and test conditions, accurate eyewitnesses probably differ from inaccurate eyewitnesses in many respects. Therefore, rather than allowing eyewitnesses to self-sort into accurate versus inaccurate conditions by their performance, we manipulated the accuracy of the eyewitnesses. There are many ways to manipulate the accuracy of eyewitness identifications, but we chose the simplest and surest method, namely, adding and removing the actual culprit from the lineup (see Wells & Lindsay, 1980; Wells & Turtle, 1986). When

¹ Our use of the term *feedback* in this article should not be confused with its use in other studies. Granhag, Stromwall, and Allwood (2000), for instance, gave participants feedback about their actual performance on an eyewitness recall task. In the present research, feedback was a randomly determined variable that was manipulated independently of actual performance.

combined with instructions that imply that the culprit is in the lineup, leaving the actual culprit out of the lineup almost always results in mistaken identifications. Including the culprit in the lineup, in contrast, generally produces a high rate of accurate identifications.

Other Testimony-Relevant Judgments

The retrospective certainty of inaccurate witnesses is not the only testimony-relevant judgment affected by postidentification feedback. Feedback has been shown to affect eyewitnesses' retrospective reports of how much attention they paid at the time of witnessing, how good their view of the culprit was during witnessing, how long it took them to make their identification, their willingness to testify about their identification, and even how good they are in general at recognizing faces of strangers (Wells & Bradfield, 1998, 1999). Each of these variables is an important component of the impression that eyewitnesses convey to triers of fact during testimony. For example, Bradfield and Wells (2000) showed that participant-jurors tend to combine various testimony components (e.g., view, attention, and witness certainty) in an additive fashion in reaching a conclusion about the likely accuracy of an eyewitness identification. Although our primary emphasis is on the effects of feedback on the certainty-accuracy relation, we suspected that feedback would also muddle the relation between accuracy and these other testimony-relevant judgments.

Pilot Testing and the Development of New Materials

We began our investigation into the question of whether feedback harms the certainty-accuracy relation by using the video and lineup materials that were used in the original studies by Wells and Bradfield (1998, 1999). Added to these materials was a picture of the actual gunman so that culprit-present lineups could be created. The actual culprit was substituted for the photo that was chosen most frequently in the culprit-absent conditions of Wells and Bradfield's studies. These materials were used with 132 participants (66 viewing the culprit-present lineups and 66 viewing the culprit-absent lineups) without feedback. As we expected, almost all (92%) of the participants in the culprit-present condition chose the culprit, and all of the participants in the culprit-absent condition mistakenly chose someone. Hence, we successfully manipulated accuracy. However, the correlation between certainty and accuracy was a mere .18. To test the hypothesis that postidentification feedback harms the certainty-accuracy relation, it is necessary to have a strong certainty-accuracy relation in the control (no-feedback) conditions. A small certainty-accuracy relation in the no-feedback conditions means that, for the hypothesis to be supported, this already small correlation would have to be reduced further. Hence, we judged the original materials to be inadequate for testing the focal hypothesis in the present research.

We created new experimental materials designed to produce a strong certainty-accuracy relation in the no-feedback (control) conditions. In Wells and Bradfield's (1998, 1999) original video, participants had a very poor view of the culprit. We took care in preparing the new video to ensure that participants had a very good view of the culprit. Research has shown that the certainty-accuracy relation is higher under good viewing conditions than under poor viewing conditions (Bothwell et al., 1987). Another

characteristic of Wells and Bradfield's original materials was that the innocent suspect's photo was similar to the culprit's appearance in the video, which meant that witnesses making this inaccurate choice were doing so with some certainty. In the new culprit-absent lineup, no one showed a high resemblance to the culprit in the video. Finally, in Wells and Bradfield's original materials, the photo of the culprit in the culprit-present lineups did not capture his appearance in the video very well, which meant that accurate witnesses had a reason to not be very certain about their identification of him. In the new materials, we took care to ensure high similarity between the culprit's appearance in the video and his appearance in the lineup.

With these new materials, we expected a strong certainty-accuracy relation in the control (no-feedback) conditions. We manipulated accuracy by randomly determining whether participants saw a culprit-present lineup or a culprit-absent lineup. We also manipulated confirming feedback; participants were told "Good, you identified the actual suspect," or they were given no information about the accuracy of their identification. Therefore, the resulting design was a 2 (accurate vs. inaccurate) \times 2 (confirming feedback vs. control) fully randomized, between-participants factorial.

Method

Participants and Materials

Participants were 245 undergraduate psychology students at a large midwestern university. Students received extra course credit in their psychology courses in return for their participation.

Video. Participants watched a 3-min video in which a young man was captured engaging in a series of behaviors: huddling over a ventilation pipe, looking directly into the camera, and so forth. At least three times the man looked directly into the camera. Therefore, there were several opportunities for participants to get a clear view of the man's face.

Lineup. Participants viewed one of two six-person videotaped live lineups. In the culprit-present lineup, the culprit appeared in Position 1. In the culprit-absent lineup, the culprit was removed, and someone matching his general description took his position. Each man in the lineup held a piece of paper on which a number (1-6) was printed. The video opened with a shot of all six men on the screen, then moved into a close-up of each man, and ended with another shot of all six men.

Dependent measures questionnaire. Participants completed a dependent measures questionnaire containing questions about 10 testimony-relevant judgments (see Table 1):

Procedure

On arriving at the experiment location, participants heard that the experiment concerned "making impressions of others" and that their job was to watch a video and answer some questions about what they saw. After the video was over, the experimenter explained to participants that the video showed a person who planted a bomb in a building and that they were to attempt to identify the person from a lineup. At that point, participants were randomly assigned to one of four experimental conditions: culprit-present lineup/confirming feedback, culprit-present lineup/no feedback, culprit-absent lineup/confirming feedback, or culprit-absent lineup/no feedback. Participants then made an identification from the six-person videotaped

Table 1
Dependent Measures Questionnaire

Dependent measures question	Scale
At the time you identified the person in the video lineup, how certain were you that the person you identified from the video lineup was the person you saw in the video?	0% (<i>not at all certain</i>) to 100% (<i>totally certain</i>)
How good of a view did you get of the person in the video?	0 (<i>very poor</i>) to 10 (<i>very good</i>)
How well were you able to make out specific features of the person's face from the video?	0 (<i>not at all</i>) to 10 (<i>very well</i>)
How much attention were you paying to the person's face while viewing the video?	0 (<i>none</i>) to 10 (<i>my total attention</i>)
To what extent do you feel that you had a good basis (enough information) to make an identification?	0 (<i>no basis at all</i>) to 10 (<i>a very good basis</i>)
How easy or difficult was it for you to figure out which person in the video lineup was the person you saw in the video?	0 (<i>extremely difficult</i>) to 10 (<i>extremely easy</i>)
After you were first shown the video lineup, how long do you estimate it took you to make an identification?	0 (<i>I needed almost no time to identify someone</i>) to 10 (<i>I had to think about the video lineup for a long time to pick a photo</i>)
On the basis of your memory of the person you saw in the video, how willing would you have been to testify in court that the person you identified was the person in the video?	0 (<i>not at all willing</i>) to 10 (<i>totally willing</i>)
Generally, how good is your recognition memory for the faces of strangers you have encountered on only one prior occasion?	0 (<i>very poor</i>) to 10 (<i>excellent</i>)
How clear is the image you have in your memory of the person you saw in the video?	0 (<i>not at all clear</i>) to 10 (<i>very clear</i>).

lineup.² To ensure that all participants made an identification, instructions given by the lineup administrator were biased; participants were not explicitly informed that the actual culprit might not be in the lineup. Unbiased instructions "warn" witnesses that the culprit might not be in the lineup, thus reducing the rate of identifications from culprit-absent lineups (Malpass & Devine, 1981).

After making an identification, participants in the confirming feedback condition heard "Good, you identified the actual suspect." Participants in the control condition were given no information about the accuracy of their identification. After hearing feedback, all participants completed the same dependent measures questionnaire. After completing the questionnaire, participants were thanked for their participation, fully debriefed, and dismissed.

Results

We expected that the experimental materials would produce a strong relation between participants' accuracy and their retrospective certainty reports, providing a fair test of whether confirming feedback diminished the certainty-accuracy relation. After testing the effect of confirming feedback on the certainty-accuracy relation, we conducted additional tests to assess the effect of confirming feedback on other testimony-relevant judgments. In addition, we conducted tests to assess the effect of the accuracy manipulation on participants' reports of retrospective certainty and other testimony-relevant judgments.

Did Confirming Feedback Affect the Certainty-Accuracy Relation?

A two-way (Accuracy × Feedback) analysis of variance (ANOVA) revealed the typical postidentification feedback effect:

Participants who heard confirming feedback recalled having greater certainty in the accuracy of their identification than did participants in the control condition (see Table 2 for all relevant statistics).³ The main effect for accuracy was also significant: Participants who made an accurate identification recalled having greater certainty than did participants who made an inaccurate identification. In addition, the interaction between accuracy and feedback was significant. Simple main effects tests indicated that, for inaccurate witnesses, retrospective certainty reports were significantly higher in the confirming feedback condition ($M = 67.76$) than in the control condition ($M = 49.35$, $d = 0.62$), $t(118) = 3.56$, $p < .01$. However, for accurate witnesses, retrospective certainty reports were equivalent in the confirming feedback ($M = 85.00$) and control conditions ($M = 80.31$, $d = 0.21$), $t(125) = 1.19$, $p = .24$.

The significant Feedback × Accuracy interaction on participants' retrospective certainty reports indicates that the certainty-accuracy relation was affected by confirming feedback. In the control (i.e., no-feedback) conditions, the relation between retrospective certainty and accuracy was highly significant ($r = .58$, $p < .01$). However, in the confirming feedback conditions, the correlation was significantly reduced ($r = .37$, $p < .01$; $z = 1.57$,

² A small percentage (9%) of participants in the culprit-present condition did not identify the suspect. The data for these participants were removed from the analyses. Doing so did not change any conclusions; therefore, they are not discussed further.

³ Two participants did not respond to the certainty question and were not included in this analysis.

Table 2
Means, Standard Deviations, and Results From the Feedback \times Accuracy Analysis of Variance

Condition	Dependent measure									
	Certain	View	Face	Attention	Basis	Easy	Long	Testify	Strangers	Image
Inaccurate witnesses										
Control	49.35 (29.24)	6.66 (1.95)	5.28 (1.96)	5.34 (2.31)	5.41 (2.43)	4.60 (2.66)	5.71 (2.66)	3.30 (2.84)	6.48 (2.28)	5.83 (1.51)
Confirming feedback	67.76 (27.21)	7.53 (1.94)	6.27 (2.43)	6.32 (2.18)	6.61 (2.44)	6.19 (2.78)	4.97 (2.90)	5.39 (3.07)	7.19 (2.00)	6.88 (1.99)
Accurate witnesses										
Control	81.96 (21.36)	8.16 (1.42)	7.34 (1.68)	6.77 (2.11)	7.52 (1.88)	8.06 (1.93)	2.50 (1.97)	7.02 (2.48)	7.73 (1.67)	7.71 (1.65)
Confirming feedback	87.00 (18.80)	8.30 (1.59)	7.32 (1.92)	6.98 (2.08)	8.05 (1.66)	8.34 (1.89)	2.59 (2.31)	7.66 (2.47)	7.86 (1.51)	7.86 (2.23)
Accuracy										
<i>F</i>	13.74 ^a	26.24 ^b	36.39 ^b	14.19 ^b	42.39 ^b	86.66 ^c	76.88 ^c	73.19 ^c	14.54 ^c	35.54 ^c
<i>MSE</i>	601.72	3.03	4.04	4.72	4.54	5.52	6.16	7.43	3.48	3.51
<i>p</i>	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
<i>d</i>	0.92	0.63	0.72	0.48	0.38	0.37	0.98	0.94	0.48	0.71
Feedback										
<i>F</i>	67.27 ^a	5.13 ^b	3.51 ^b	4.57 ^b	10.16 ^b	9.49 ^c	1.06 ^c	15.26 ^c	2.43 ^c	6.34 ^c
<i>MSE</i>	601.72	3.03	3.54	4.72	4.54	5.52	6.16	7.43	3.48	3.51
<i>p</i>	.01	.03	.06	.03	.01	.01	.31	.01	.12	.01
<i>d</i>	0.42	0.28	0.23	0.27	0.77	1.01	0.12	0.43	0.19	0.30
Feedback \times Accuracy										
<i>F</i>	4.47 ^a	2.69 ^b	3.87 ^b	1.92 ^b	1.51 ^b	4.71 ^c	1.74 ^c	4.26 ^c	1.98 ^c	3.51 ^c
<i>MSE</i>	601.72	3.03	4.04	4.72	4.54	5.52	6.16	7.43	3.48	3.51
<i>p</i>	.04	.10	.05	.17	.22	.03	.19	.04	.16	.06
<i>d</i>	0.47	0.39	0.46	0.34	0.29	0.47	0.29	0.45	0.35	0.44

Note. Column headings for the dependent measures correspond to words in boldface type in Table 1. Cells in the top portion of the table contain means and standard deviations (in parentheses). Cells in the bottom portion of the table correspond to analysis of variance results. Effect size estimates are expressed as *d*, which is the mean difference in standard deviation units.

^a *df* = 237. ^b *df* = 241. ^c *df* = 239.

p = .03, one-tailed): Confirming feedback diminished the strength of the relation between retrospective certainty and accuracy by inflating the retrospective certainty of inaccurate witnesses but not the retrospective certainty of accurate witnesses (see Figure 1).

Did Confirming Feedback Affect Other Testimony-Relevant Judgments?

We conducted two-way ANOVAs on the other testimony-relevant judgments. There was a significant main effect for confirming feedback on seven of the nine measures. Compared with participants in the control condition, participants who received confirming feedback reported having a better view of the culprit,

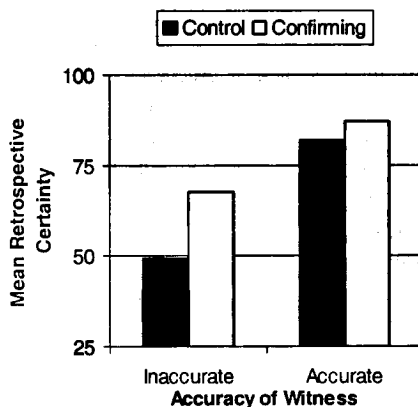


Figure 1. Confirming feedback diminishes the certainty-accuracy relation.

paying more attention to the video, having a better basis for their identification, more easily making their identification, being more willing to testify, and having a clearer image of the culprit's face in their mind (see Table 2). The effect of confirming feedback on participants' reports of their ability to make out details of the culprit's face was marginally significant; compared with participants in the control condition, participants who received confirming feedback reported a better ability to make out details of the culprit's face. The effect of feedback was not significant on participants' reports of how long it took them to make their identification or their general ability to recognize strangers seen on only one prior occasion.

The ANOVAs also revealed significant main effects for the accuracy variable for all nine testimony-relevant judgments. Compared with inaccurate witnesses, witnesses who made an accurate identification reported having a better view of the culprit, being better able to make out details of the culprit's face, paying more attention to the video, having a better basis for their identification, more easily making their identification, more quickly making their identification, being more willing to testify, being better at identifying the faces of strangers seen on only one prior occasion, and having a clearer image of the culprit's face in their mind (see Table 2).

There were three significant Feedback \times Accuracy interactions on the following dependent measures: participants' reports of their ability to make out details of the culprit's face, the ease with which their identification was made, and their willingness to testify. Tests of simple main effects revealed that, for these measures, confirming feedback did not affect the reports of accurate witnesses, $t(119) < 1.43$, $ps > .15$, $ds < 0.26$, whereas it inflated the reports of inaccurate witnesses, $t(120) > 2.50$, $ps < .01$, $ds > 0.44$. The

interaction between feedback and accuracy on participants' reports of how clear the image of the culprit was in memory was marginally significant; confirming feedback did not affect accurate witnesses, $t(119) = 0.54, p = .59, d = 0.10$, but it inflated the reports of inaccurate witnesses, $t(120) = 2.75, p < .01, d = 0.48$. No other interactions were significant. However, we note that the predicted interaction pattern (i.e., smaller differences between accurate and inaccurate witnesses in the confirming feedback condition than in the control condition) was present for all measures (see Table 2).

Discussion

This experiment replicated previous research on the postidentification feedback effect (e.g., Wells & Bradfield, 1998, 1999). Participants who heard information suggesting that their identification was correct (i.e., confirming feedback) inflated their recollections on a number of testimony-relevant judgments. It is important to note that feedback distorted participants' recollections of events that occurred before feedback was given (certainty at the time of the identification, ease with which the identification was made, etc.). Therefore, the effect of feedback on witnesses' recollections is an illusion of sorts because participants were randomly assigned to conditions after having viewed the event and after having made their identification.

This research is not only a conceptual replication of the postidentification feedback effect but also an extension of our understanding of how postidentification feedback affects the relation between certainty and accuracy. Our results indicate that confirming feedback significantly diminishes the strength of the certainty-accuracy relation, thereby reducing the usefulness of retrospective certainty reports as cues to identification accuracy. The strength of the certainty-accuracy relation was diminished because confirming feedback inflated the retrospective certainty reports of inaccurate witnesses but not the reports of accurate witnesses.

We believe that retrospective certainty reports of accurate witnesses were not inflated by confirming feedback because the accurate witnesses' internal cues were strong. Accurate witnesses made their identification on the basis of strong ephoric similarity; the degree of match between their memory of the culprit and the appearance of the person whom they selected from the lineup was high (i.e., because they, in fact, identified the culprit). In contrast, inaccurate witnesses had weak internal cues because the degree of match between their memory of the culprit and the appearance of the person whom they identified was low (i.e., low ephoric similarity). Because their internal cues were weak, they were susceptible to external influence in the form of a casual comment from the lineup administrator. We believe that, after hearing feedback, participants engaged in a Bemian self-perception process when answering the dependent measures questionnaire (e.g., "I must not have been certain when I made my identification because I chose the wrong person"; Bem, 1972).

Although we think that the moderating effect of feedback on the certainty-accuracy relation was due to differences in ephoric similarity between accurate and inaccurate witnesses, there are other potential explanations. One possibility is that the accurate witnesses experienced a ceiling effect on the certainty measure in the confirming feedback condition. According to this possibility, the inaccurate witnesses had sufficient "room" to move up the

certainty scale, whereas the accurate witnesses, who already were approximately 82% certain in the control condition, had less room to move up in certainty as a function of confirming feedback. From an applied perspective, we do not think that this is a significant problem because the scale used in this research represents a realistic upper limit; eyewitnesses cannot report more than 100% certainty in an identification. From a technical perspective, we do not think that our results can be explained by a ceiling effect for two additional reasons. First, although mean certainty in the confirming feedback/accurate witness condition was 87%, more than half (57%) of the witnesses in this condition could have increased their certainty even further on the scale. Because there was room for witnesses to increase their certainty and they did not take advantage of that opportunity, we should conclude that confirming feedback does not, rather than cannot, inflate the retrospective certainty of accurate witnesses. Second, the means for the other testimony-relevant judgments (view, attention, etc.) were nowhere close to the endpoints of the scales, and yet each showed the same moderation pattern in which the difference between accurate and inaccurate witnesses was diminished by confirming feedback (see Table 2).

Implications of Inflated Certainty Reports

Regardless of the psychological mechanisms that led confirming feedback to diminish the certainty-accuracy relation, the practical implications are clear. An inflated certainty report has a rippling effect throughout the justice system. Prosecutors are more likely to bring charges in cases in which the eyewitness is believed to be certain than in cases in which the eyewitness is uncertain. If the decision is made to prosecute, the defense will often submit motions to suppress the identification evidence on the grounds that it is unreliable. Judges review these defense motions and generally follow guidelines such as those laid out in *Neil v. Biggers* (1972), which give prominence to the certainty of the eyewitness. If the eyewitness is certain, motions to suppress almost never prevail.

The implications of an inflated certainty report extend beyond decisions to prosecute a suspect who has been identified. In general, the postidentification feedback effect captures a situation in which a social influence variable (e.g., confirming feedback) affects recollections of the past. Other studies have also examined the effect of social influence in distorting recollections of the past. For example, some false confessions occur because pressure from interrogators causes innocent suspects to believe that they actually committed a crime (Kassin, 1997). Pressure from questioners can also cause distortions in children's reports of the past (e.g., Garven, Wood, Malpass, & Shaw, 1998). Social influence can even cause a witness to recall seeing an accomplice when there was none (Wright, Self, & Justice, 2000). Future research will play an important role in delineating the extent to which social influence can distort recollections of the past, a potentially disastrous effect in forensic contexts.

Corollary Effects of the Feedback and Accuracy Variables

Although our primary interest was in the effects of feedback on retrospective certainty, we found that feedback had broad effects

on a variety of testimony-relevant judgments, thereby replicating the kinds of effects reported in previous studies (Wells & Bradfield, 1998, 1999). Feedback inflated witnesses' recollections of their ability to make out details of the culprit's face, the ease with which they were able to make their identification, and their willingness to testify. It is important that the effect of feedback on these measures interacted with the accuracy variable in the same way as it did on the certainty measure; inflation was greater for inaccurate eyewitnesses than for accurate eyewitnesses. Hence, whatever diagnostic value these measures have for the trier of fact is diminished by the provision of feedback.

In addition, all nine testimony-relevant judgments were affected by the accuracy manipulation (see Table 2). For example, participants who made an accurate identification reported that they had a better basis for their identification than did participants who made an inaccurate identification. It makes sense that, compared with participants who made an inaccurate identification, participants who made an accurate identification would give more positive reports on judgments directly related to the identification task (e.g., ease of the identification task). We were quite surprised, however, to find reliable effects of accuracy on participants' retrospective reports of how good their view was, how much attention they were paying to the culprit, and how well they could make out details of the culprit's face. In spite of the fact that confirming feedback mitigated the effect of the accuracy variable, we still observed strong differences between accurate and inaccurate witnesses' recollections.

Although we expected the accuracy manipulation to affect certainty, we did not expect the accuracy manipulation to affect other retrospective reports, such as the eyewitnesses' recollections of their view, how much attention they paid, and so on. We suggest that accuracy affected these recollections because witnesses were using the degree of similarity between the identified person and their memory of the culprit to make inferences about what their view "must have been like," how much they "must have been paying attention," and the extent to which they "must have been able" to make out details of the culprit's face. For example, participants who made a false identification might have thought "I must have had a poor view because my memory of the culprit does not closely match the person I identified." This type of inference process is similar to what has been suggested happens with confirming feedback ("I was correct; therefore, I must have had a good view"; see Wells & Bradfield, 1999). In the case of the accuracy manipulation, this inference process is probably mediated by assumptions about the implications of high ephoric similarity (e.g., "I must have had a good view because the person I identified matches my memory of the culprit"). Therefore, we suggest that this process is more self-perception than it is self-justification (i.e., one in which witnesses are trying to "blame" their poor view for their identification error). However, this study was not designed to disentangle the effects of self-perception from those of self-justification, largely because the broad effects of the accuracy variable were unexpected. We acknowledge that it is possible that self-justification rather than self-perception explains the effect of the accuracy variable.

The effects of the accuracy manipulation suggest that triers of fact might be able to discern cues to identification accuracy when eyewitness testimony is accompanied by positive retrospective reports. However, recall that accuracy was manipulated through

random assignment to view lineups that did or did not include the actual culprit; the manipulation occurred after the witnessed event was over. Hence, the actual view that witnesses received, the actual amount of attention they paid, and how well they could actually make out details of the culprit's face were equivalent across conditions. In a sense, then, the accuracy manipulation produced distortions in recollections similar to those produced by the feedback manipulation. Future research should investigate the implications of accuracy manipulations on witnesses' recollections and, ultimately, on their credibility.

The inference process initiated by the feedback and accuracy manipulations and the resulting distortions in recollections were produced by subtle operationalizations of these variables. Even so, the inflating effects of confirming feedback and the accuracy manipulation were relatively large (average d s = 0.40 and 0.66, respectively). Real cases might involve even stronger manipulations than the ones we used. Consider, for instance, the case of *Iowa v. Schawitsch* (2000), in which the key eyewitness was asked what, if anything, the police investigators did when she pointed to the defendant's photo in the photoarray. "They clapped," she said. Although the results from this study indicate that accuracy is an important contributor to distorted recollections of testimony-relevant judgments, witness accuracy is not under the control of the judicial system in the same way that postidentification feedback is (Wells, 1978). Therefore, to prevent the kind of distortions observed in this research from contaminating the reports of actual eyewitnesses, recommendations for procedural changes should focus on ways to prevent the administration of postidentification feedback. There currently are no legal prohibitions against giving feedback to eyewitnesses (Wells, 1993). Therefore, two recommendations are described below.

Double-Blind Testing

A lineup administrator who is invested in the outcome of a witness's identification cannot be expected to have the same reaction (verbally or nonverbally) to a filler identification that he or she has to an identification of the suspect. Even if investigators are cautioned against giving feedback to eyewitnesses, involuntary reactions to a witness's selection are difficult to conceal.

In early scientific research, experimenters confronted the same problem: Good-faith attempts by experimenters to refrain from influencing their participants were insufficient. The only acceptable safeguard became the "double-blind" experiment, in which neither the experimenter nor the participant knew what the hypothesis was. Therefore, the experimenter was unable to influence the participant to respond in a way that was consistent with the hypothesis. We recommend that the double-blind strategy be used in eyewitness identification procedures. If the lineup administrator does not know the hypothesis (i.e., which person is the suspect), he or she cannot influence the witness's reports by reacting positively to a suspect identification or negatively to a filler identification. Double-blind testing can be accomplished by having the lineup administered by someone who does not know who the suspect is or by using other techniques (e.g., computer-controlled administration) that keep the investigating officer from influencing the eyewitness.

Collection of Certainty Reports Immediately After an Identification

Based on input from eyewitness researchers, the U.S. Department of Justice's recent publication of guidelines for police on conducting lineups recommends that the lineup administrator should not tell the eyewitness anything about the identified person until the eyewitness has made a statement of certainty (Technical Working Group for Eyewitness Evidence, 1999). Although the eyewitness eventually learns whether the identified person is a suspect or a filler, the certainty of the eyewitness can be obtained and recorded before the eyewitness learns this. The certainty of the witness at the time of the identification, uncontaminated by feedback, would then be available at trial through discovery motions. In light of the broad effect of feedback on witnesses' recollections, we further recommend that lineup administrators collect as much information as possible from witnesses, prior to the administration of any feedback, about their identification (recollections of view, attention, etc.).

Having eyewitnesses report their certainty at the time of the identification without the contamination of external influences might inoculate them against later certainty-inflating information. If so, their expressions of certainty during a trial might remain uncontaminated. We anticipate, however, that there might be times when an eyewitness was somewhat uncertain at the time of the identification (prior to feedback) but is highly certain about his or her identification at trial (because of feedback received over time). Assuming the earlier uncertainty of the eyewitness was recorded and becomes part of the evidence at trial, what would jurors do with this information? Would jurors recognize that memory does not get better with the passage of time and that the inflated certainty of the eyewitness at trial is probably a result of something other than memory? Would jurors average the two certainty levels? Or would jurors discount the earlier uncertainty of the eyewitness and focus instead on the certainty being expressed at trial?

The logic of conducting a police lineup is to find out what the eyewitness knows about the identity of the culprit on the basis of the eyewitness's memory alone, without external factors influencing whom the eyewitness picks or how certain the eyewitness is. Wells and Luus (1990) described how problems in conducting lineups are analogous to confounds in psychology experiments. This rich analogy permits us to readily see how postidentification comments from police investigators confound interpretations of the certainty of eyewitnesses. The justice system has used (and will continue to use) eyewitness identification certainty as a central cue to the accuracy of the identification. We propose that the system protect the integrity of an eyewitness's certainty by ensuring that the reports obtained are free of external influence.

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Received June 22, 2000

Revision received March 28, 2001

Accepted April 9, 2001 ■



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