The Moderating Effect of Euphoric Experience on Post-identification Feedback: A Critical Test of the Cues-based Inference Conceptualization

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Summary: Confidence inflation from confirming post-identification feedback is greater when the eyewitness is inaccurate than when the eyewitness is accurate, which is evidence that witnesses infer their confidence from feedback only to the extent that their internal cues are weak. But the accurate/inaccurate asymmetry has alternative interpretations. A critical test between these interpretations was conducted by including disconfirming feedback conditions. Student participants (n=404) witnessed a mock crime, had either a strong or weak euphoric experience when making their line-up identifications, and subsequently received no feedback, confirming feedback, or disconfirming feedback. Consistent with a cues-based conceptualization of the feedback effect, disconfirming feedback influenced witnesses with weak euphoric experiences more than witnesses with strong euphoric experiences, ironically increasing the confidence-accuracy relation. Copyright © 2011 John Wiley & Sons, Ltd.

Mistaken eyewitness identification appears to be the primary cause of the criminal conviction of innocent people; over 75% of DNA-based exonerations were cases of mistaken eyewitness identification (Innocence Project, 2008). But mistaken identification per se does not lead to the conviction of innocent people. Instead the innocent are at risk of conviction only if the witness is both mistaken and believable (to the triers of fact). Eyewitness science has long been interested in eyewitness identification confidence because people rely heavily on the confidence of the eyewitness to decide whether the witness made an accurate identification (e.g. Wells, Lindsay & Ferguson, 1979; Wells, Ferguson & Lindsay, 1981). In fact, the confidence of a witness as a criterion for evaluating eyewitness identification accuracy is enshrined in US law as a result of a US Supreme Court ruling (Manson v. Braithwaite, 1977).

Because of the central importance of witnesses’ self-reports of confidence, considerable research has focused on phenomena that can distort a witness’s confidence, such as post-identification feedback (Wells & Bradfield, 1998). Giving inaccurate eyewitnesses feedback, suggesting that they identified the right person from a line-up, strongly inflates their reports of how confident they were when they made their identification (their retrospective confidence). In addition, confirming post-identification feedback inflates eyewitnesses’ reports of how good their view was of the perpetrator, the amount of attention they paid during witnessing, how long they took to make their identification, and other testimony-relevant judgments. Feedback does not affect the accuracy or inaccuracy of the identification, of course, because the manipulation occurs after the identification decision has been made. Hence, the post-identification feedback effect results in a dissociation between confidence and accuracy (as well as between these other self-reports and accuracy) that has both practical and theoretical significance.

Since the first demonstration of the post-identification feedback phenomenon, the effect has been widely replicated.

A meta-analysis indicates that the post-identification feedback effect is robust and reliable (Douglass & Steblay, 2006) and persists even if the feedback or the measures of its effects are delayed (Neuschatz et al., 2005; Wells, Olson, & Charman, 2003). In addition, the post-identification feedback effect has been shown to occur for actual eyewitnesses to serious crimes (Wright & Skagerberg, 2007).

The principal focus of the current work is on the theoretical side of the post-identification feedback effect. Despite a fairly large number of studies that have replicated the post-identification feedback effect under diverse sets of conditions, little of this research has been directed at critical tests of underlying presumptions of why the post-identification feedback effect occurs.

THE CUES-BASED INFERENCE CONCEPTUALIZATION

Current interpretations of the post-identification feedback effect hold that eyewitnesses have little or no memory trace for how confident they were at the time of their identification (e.g. the cues hypothesis: Wells & Bradfield, 1999; recently updated as the selective cue integration framework: Charman, Carlucci, Vallano, & Hyman Gregory, 2010). As a result, one’s confidence must largely be post-computed at the time that eyewitness are first asked to report it. At that point, eyewitnesses will use all information available for making the judgment which, in the absence of a clear memory trace that could serve as a cue for their confidence, is largely an inference process. Post-identification feedback is one such piece of relevant information—a cue—for making such an inference. Given confirming feedback, for instance, eyewitnesses infer that they must have been confident. This type of inference process has been likened to several other processes, such as Bemian self-perception processes (Bem, 1972), the use of the present feelings to make inferences about past psychological states (Gilbert, 2006; Ross, 1989), and the selective use of informational subsets that are made accessible at the time of judgment (Schwarz, 1995).
Importantly, the cues-based conceptualization states that witnesses will only use external cues—such as feedback—to the extent that they lack strong internal cues. What are these internal cues that witnesses may use?

Ephoric experience

One obvious possibility is that witnesses will use their ephoric experience as a cue. Ephoric experience refers to the subjective sense of similarity between a stimulus and a person’s memory (Tulving, 1981). In the case of a line-up, the strongest ephoric experience should occur when the actual culprit is in the line-up rather than when an innocent suspect is in the line-up. To the extent that witnesses use their ephoric experience as a cue when making their confidence judgments, then, these judgments should, to some degree, reflect witnesses’ accuracy. Indeed, much research has indicated that accurate identifications of a culprit, which should tend to be accompanied by a relatively strong ephoric experience, are made with significantly higher confidence than inaccurate identifications of an innocent suspect, which should tend to be accompanied by a relatively weak ephoric experience (see Sporer, Penrod, Read, & Cutler, 1995; Wells, Olson, & Charman, 2002). Furthermore, the more similar an innocent suspect is to the culprit (and hence the stronger the ephoric experience), the higher a witness’s confidence (Lindsay, 1986). Inaccurate identifications of highly similar innocent suspects can even result in witnesses reporting that the suspect ‘popped out’ from the line-up (Ross, Benton, McDonnell, Metzger, & Silver, 2007). This research all converges on the idea that witnesses use ephoric experience as a basis for their retrospective confidence judgments.

EVIDENCE SUPPORTING THE CUES CONCEPTUALIZATION

One line of evidence consistent with this cues-based inference conceptualization is the pre-feedback thought-prophylactic effect. Although the mere passage of time prior to giving feedback (at least up to 48 hours) does not itself mitigate the post-identification feedback effect (Wells, Olson, & Charman, 2003), making eyewitnesses privately think about their confidence prior to receiving feedback does (Neuschatz et al., 2007; Wells & Bradfield, 1999). Presumably, private thought about one’s confidence prior to feedback creates a memory trace that eyewitnesses can use as a cue for making their judgments, thereby reducing the need to rely on feedback as a cue to make these judgments.

But although consistent with the cues hypothesis, these studies did not actually manipulate the witness’s ephoric experience at the time of the line-up itself, which would be a more direct test of the cues hypothesis. To provide such a test, Bradfield, Wells, and Olson (2002) hypothesized that eyewitnesses should be less influenced by feedback if they made an accurate identification than if they made a mistaken identification. They reasoned that the stronger ephoric experience that accompanies an accurate identification (relative to a mistaken identification) should lead accurate witnesses to rely more heavily on it as a cue to their retrospective confidence, consequently reducing their reliance on the feedback cue. They tested this by manipulating whether the witness identified the actual target or identified an innocent line-up member. This was done by randomly assigning participants to view a line-up that included the target or did not include the target. All participants were urged to make an identification. The target was chosen by 91% of participants in the target-present condition and an innocent person was chosen by 100% of the participants in the target-absent condition. Participants were then randomly assigned to either receive confirming feedback or no feedback. As predicted, confirming feedback increased the confidence of mistaken eyewitnesses more than it increased the confidence of accurate eyewitnesses.

The method for manipulating accuracy that was used by Bradfield et al. (2002) is critical to testing the idea that the ephoric experience is what moderated the effect of post-identification feedback. There are, of course, other ways to manipulate the accuracy of the eyewitnesses, such as giving them a good versus poor view, directing their attention to the target during witnessing, and so on. But this would change the actual memories of the witnesses (and the accuracy base rates), whereas the manipulation of whether the target is present or not has the clear advantage of being a direct manipulation of the ephoric experience at the time of the identification. This means that the manipulation is not a manipulation of good memory versus poor memory. In fact, random assignment to the target-present versus target-absent line-up conditions assures that the memory strength of witnesses for the culprit will be the same across conditions.

The moderating effect of eyewitness identification accuracy has helped clarify the cues-based inference conceptualization of the post-identification feedback effect. Like the private-thought manipulation, the moderating role of accuracy indicates that eyewitnesses’ reliance on post-identification feedback to infer their judgments is inversely related to the strength of other cues; when those other cues are strong, feedback is relied upon less. The study of Bradfield et al. (2002) was important for practical reasons as well, because it showed that confirming feedback reduces the confidence-accuracy correlation. Specifically, because the confidence-accuracy correlation is a point-biserial correlation, a manipulation that raises the confidence of mistaken eyewitnesses more than it raises the confidence of accurate witnesses serves to reduce the magnitude of the correlation (because it reduces the mean difference in confidence between accurate and inaccurate eyewitnesses).

ALTERNATIVE EXPLANATIONS FOR BRADFIELD, WELLS, AND OLSON (2002)

Although the cues-based inference conceptualization is clearly consistent with the feedback by accuracy interaction found by Bradfield et al. (2002), there are at least two alternative interpretations for this interaction. First, some researchers have suggested that the impact of post-identification feedback is dependent on the degree to which it contradicts the expectations of the witness, a hypothesis we call the expectancy-
violation hypothesis (Semmler & Brewer, 2006; see Wright & Skagerberg, 2007, for a similar suggestion). Feedback that confirms an identification should tend to contradict the expectations of witnesses who had a weak ecphoric experience more than it contradicts witnesses who had a strong ecphoric experience; consequently, weak ecphoric experience witnesses should show more confidence inflation than strong ecphoric experience witnesses following post-identification feedback, exactly the pattern found in Bradfield et al.

Second, because accurate witnesses who did not receive confirming feedback in the Bradfield et al. (2002) study were already quite confident (82%), whereas the mistaken eyewitnesses were not (49%), this particular interaction pattern (greater increase from feedback for inaccurate than for accurate witnesses) can be explained as a statistical artifact. In general, it is often more difficult to inflate already high scores than it is to inflate lower scores, especially if the former is pushing against the ceiling of a scale. In fact, feedback increased the confidence of mistaken eyewitnesses by 18.5%, which means that the accurate witnesses could not fully increase their confidence by the same amount without exceeding 100%. In other words, the amount of room for increasing confidence was much less for the accurate witnesses than it was for the mistaken witnesses. Although Bradfield et al. acknowledged this initial scale differences confound, they were unable to resolve it.

A STRONGER TEST OF THE CUES-BASED INference CONCEPTUALIZATION

Consequently, the existence of these alternative explanations means that the Bradfield et al. (2002) results do not offer unequivocal support for the cues hypothesis. Our goal in the current manuscript was to provide a stronger test of the cues-based inference conceptualization. It is clear that using only confirming feedback produces interpretational ambiguities, and is thus inadequate to test this conceptualization. However, using disconfirming feedback—whereby the witness is told he/she made an incorrect identification—circumvents the problems associated with confirming feedback, as the cues-based conceptualization makes different predictions regarding its effects on confidence than either the expectation-violation or the scale-based explanations. Simply, the cues-based conceptualization predicts that strong ecphoric experience witnesses should be more influenced by feedback than weak ecphoric experience witnesses, regardless of whether the feedback is confirming or disconfirming. Thus, disconfirming feedback should deflate the confidence of weak ecphoric experience witnesses more than it deflates the confidence of strong ecphoric experience witnesses.

Both the expectation-discrepancy hypothesis and the scale-confound interpretation, however, predict different outcomes. Because disconfirming feedback violates the expectations of witnesses who had a strong ecphoric experience more than it violates the expectations of witnesses who had a weak ecphoric experience, the expectancy-violation hypothesis predicts that it is strong ecphoric experience witnesses whose confidence should be more deflated by disconfirming feedback. Similarly, the scale-confound interpretation either predicts no differential effect of disconfirming feedback on strong versus weak ecphoric experience (because there is no longer a ceiling), or that strong ecphoric experience witnesses should be more influenced by disconfirming feedback compared with weak ecphoric experience witnesses (because the strong ecphoric experience witnesses have more room to move down the scale than do the weak ecphoric experience witnesses). Hence, using disconfirming feedback can differentiate between the cues-based inference conceptualization and these alternative explanations.

A problem arises when trying to use disconfirming feedback, however. Numerous previous studies examining the post-identification feedback effect have had difficulty finding a confidence-deflating effect of disconfirming feedback (e.g. Hafstad, Memon, & Logie, 2004; Wells & Bradfield, 1998; Wells et al., 2003). The usual laboratory procedure for giving disconfirming feedback is to tell the eyewitness that the actual suspect was someone different than the person they picked and to point to a specific non-selected line-up member as having been the actual suspect. However, it is possible that the specific a priori line-up member chosen to be the ‘suspect’ in these studies is found to be implausible by a large number of participants, leading them to reject the disconfirming feedback (e.g. see Luus & Wells, 1994, for data indicating that witnesses reject disconfirming feedback if the supposed suspect is implausible). To avoid this problem, disconfirming feedback was administered in the current studies by simply telling witnesses that they identified a person who was not the suspect (rather than pointing to a specific other line-up member). It is interesting to note that in a study that did find a large disconfirming feedback effect, the feedback that was administered did not indicate the identity of the suspect (Wright & Skagerberg, 2007).

METHOD

Participants and design

Four hundred and four university undergraduates participated in exchange for extra credit in their psychology courses. Participants were randomly assigned to a feedback condition (none, confirming, or disconfirming) and an ecphoric experience condition (strong or weak). Following Bradfield et al. (2002),
ecphoric experience of the witness was manipulated by showing witnesses either a target-present line-up or a target-absent line-up and subtly forcing witnesses to make an identification via biased line-up instructions that implied that the criminal was in the line-up. Hence, almost every witness identifies the target when he is present but also everyone makes a mistaken identification when the culprit is absent.

Mock crime and line-ups
Participants watched a mock crime of a young male planting a bomb on the roof of a building. The video lasted approximately 1 minute, during which time the man’s face was visible on at least three occasions.

Two line-ups (one target-present and one target-absent) were created for this experiment. Line-ups were composed of digital pictures of four individuals, all of whom matched the general description of the criminal. The target-present line-up was identical to the target-absent line-up except that the criminal’s picture replaced the picture of the line-up member in the upper left-hand corner of the line-up. Line-up members were shown straight-on from the shoulders up in a simultaneous $2 \times 2$ display. Each picture measured approximately $2 \times 3$ in, and the line-up was shown to each participant at a distance of approximately 2 ft.

Procedure
The procedure used in the current study was identical to the procedure used in Bradfield et al. (2002), with the exception that some participants received disconfirming feedback. Upon arrival in the lab, participants were told that they would be watching a short video, and they were asked to pay attention to people in the video. Each participant was seated in front of a computer and viewed the mock crime. Following the video, the experimenter informed the participants that they had just viewed a crime and that the true purpose of this experiment was to see whether they could now make an identification from a line-up. The experimenter showed participants either a target-present or target-absent line-up, instructing them to “look at the people in the line-up and try to identify the person you saw in the video.” After participants made an identification,3 experimenters gave participants no feedback, confirming feedback (i.e. ‘Good. You identified the suspect’), or disconfirming feedback (i.e. ‘Actually, the suspect was someone else’) about their identification, depending on the participant’s experimental condition.

Following the feedback, witnesses were given a questionnaire to fill out. The questionnaire asked witnesses about their retrospective confidence in their identification and other testimony-relevant judgments (see Table 1 for exact questions). The questions were identical to those asked in the Bradfield et al. (2002) study. When participants finished with the questionnaire, they were debriefed and excused.

RESULTS
Mean scores, standard deviations, and inferential test results of major analyses are displayed in Table 2.

CONFIDENCE
A $3 \times 2$ (feedback) ANOVA indicated that witnesses who had a strong ecphoric experience were more confident in their identifications than witnesses who had a weak ecphoric experience. The main effect for feedback was also significant. The main effects were qualified, however, by a significant feedback × ecphoric experience interaction. To more fully examine this interaction, two $2 \times 2$ ANOVAs were conducted, one comparing disconfirming feedback to no feedback and the other comparing confirming feedback to no feedback. Figure 1 displays participants’ mean retrospective confidence as a function of feedback and ecphoric experience of the witness.

Collapsed across the ecphoric experience conditions, disconfirming feedback significantly reduced participants’ retrospective confidence reports relative to no feedback, $F(1, 251)=15.88, p<.001, \text{Cohen’s } f=.25$. The interaction between feedback and ecphoric experience was also significant, indicating that the difference in mean confidence between strong and weak ecphoric experience was greater among witnesses who received disconfirming feedback than among witnesses who received no feedback, $F(1, 251)=7.04, p<.01, \text{Cohen’s } f=.17$. A simple main effect analysis indicated that disconfirming feedback did not significantly deflate retrospective confidence reports among strong ecphoric experience witnesses relative to no feedback, $t(125)=.91, p=.36, d=.16$, but did significantly deflate retrospective confidence reports among weak ecphoric experience witnesses, $t(126)=4.9, p<.001, d=.87$. Collapsed across the ecphoric experience conditions, confirming feedback significantly increased participants’ retrospective confidence reports relative to no feedback, $F(1, 252)=37.15, p<.001, \text{Cohen’s } f=.38$, replicating past research with the post-identification feedback effect. The interaction between feedback (confirming versus none) and ecphoric experience was not significant, $F(1, 252)=1.9, p=.17, \text{Cohen’s } f=.08$.

Because we manipulated ecphoric experience via manipulating the accuracy of the witness, the significance of the feedback × ecphoric experience interaction indicates that the retrospective confidence-accuracy correlation was affected by feedback. For witnesses who did not receive feedback, retrospective confidence and accuracy were significantly correlated, $r=.41, p<.001$. However, the confidence-accuracy correlation was significantly increased for witnesses who received disconfirming feedback, $r=.63, p<.001; z=2.43, p=.02$. The confidence-accuracy correlation was not significantly different for witnesses who received confirming feedback ($r=.37, p<.001$) compared with witnesses who did not receive feedback ($r=.41, z=.37, p=.71$.

3 A small percentage of witnesses (11.6%) in the target-present condition did not identify the criminal. Consistent with Bradfield et al. (2002), their data were removed from analyses, leaving a total of 382 participants. Removing their data did not change any conclusions; therefore they are not discussed further.
Table 1. Dependent measures questionnaire.

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

Table 2. Mean confidence (SDs in parentheses) and other testimony-relevant judgments as a function of feedback and ecphoric similarity conditions.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Certain</th>
<th>View</th>
<th>Face</th>
<th>Attention</th>
<th>Basis</th>
<th>Easy</th>
<th>Long</th>
<th>Testify</th>
<th>Memory</th>
<th>Clear</th>
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</thead>
<tbody>
<tr>
<td>Strong ecphoric experience witnesses</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
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<tr>
<td>Disconfirming feedback</td>
<td>70.0</td>
<td>6.6</td>
<td>5.5</td>
<td>6.0</td>
<td>6.2</td>
<td>6.2</td>
<td>2.5</td>
<td>4.9</td>
<td>5.6</td>
<td>5.6</td>
</tr>
<tr>
<td>No feedback</td>
<td>74.1</td>
<td>7.2</td>
<td>6.2</td>
<td>6.7</td>
<td>6.6</td>
<td>7.1</td>
<td>2.5</td>
<td>5.9</td>
<td>6.8</td>
<td>6.6</td>
</tr>
<tr>
<td>Confirming feedback</td>
<td>87.0</td>
<td>8.3</td>
<td>7.3</td>
<td>7.4</td>
<td>8.1</td>
<td>8.6</td>
<td>2.3</td>
<td>7.7</td>
<td>7.4</td>
<td>7.9</td>
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<td>Weak ecphoric experience witnesses</td>
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<tr>
<td>Disconfirming feedback</td>
<td>31.8</td>
<td>5.6</td>
<td>4.5</td>
<td>4.7</td>
<td>4.0</td>
<td>3.2</td>
<td>2.0</td>
<td>5.3</td>
<td>5.0</td>
<td>3.7</td>
</tr>
<tr>
<td>No feedback</td>
<td>52.0</td>
<td>6.7</td>
<td>5.7</td>
<td>5.9</td>
<td>5.3</td>
<td>4.6</td>
<td>2.7</td>
<td>4.7</td>
<td>5.7</td>
<td>5.0</td>
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<tr>
<td>Confirming feedback</td>
<td>72.4</td>
<td>7.3</td>
<td>6.1</td>
<td>6.2</td>
<td>6.5</td>
<td>6.5</td>
<td>2.3</td>
<td>5.7</td>
<td>6.6</td>
<td>6.2</td>
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<td>Ecphoric experience</td>
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<td>Cues-based inference conceptualization test</td>
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<td></td>
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<tr>
<td>$F$</td>
<td>117.2</td>
<td>18.2</td>
<td>22.42</td>
<td>22.53</td>
<td>54.16</td>
<td>128.63</td>
<td>91.01</td>
<td>85.66</td>
<td>13.14</td>
<td>67.94</td>
</tr>
<tr>
<td>$MSE$</td>
<td>507.36</td>
<td>3.65</td>
<td>3.80</td>
<td>5.08</td>
<td>4.88</td>
<td>4.71</td>
<td>4.89</td>
<td>6.47</td>
<td>4.60</td>
<td>4.20</td>
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<td>$p$</td>
<td>&lt;.001</td>
<td>&lt;.001</td>
<td>&lt;.001</td>
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<td>Cohen’s $f$</td>
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<td>.22</td>
<td>.24</td>
<td>.24</td>
<td>.38</td>
<td>.59</td>
<td>.49</td>
<td>.48</td>
<td>.19</td>
<td>.43</td>
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<tr>
<td>Feedback</td>
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<tr>
<td>$F$</td>
<td>52.3</td>
<td>24.94</td>
<td>23.02</td>
<td>14.35</td>
<td>31.48</td>
<td>53.70</td>
<td>4.74</td>
<td>51.69</td>
<td>20.57</td>
<td>44.10</td>
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<tr>
<td>$MSE$</td>
<td>507.36</td>
<td>3.65</td>
<td>3.80</td>
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<td>4.71</td>
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<td>$p$</td>
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<td>Cohen’s $f$</td>
<td>.53</td>
<td>.36</td>
<td>.35</td>
<td>.28</td>
<td>.41</td>
<td>.53</td>
<td>.16</td>
<td>.52</td>
<td>.33</td>
<td>.48</td>
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<tr>
<td>Feedback × ecphoric experience</td>
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<tr>
<td>$F$</td>
<td>9.1</td>
<td>7.7</td>
<td>.90</td>
<td>.47</td>
<td>1.46</td>
<td>1.43</td>
<td>2.92</td>
<td>1.23</td>
<td>.39</td>
<td>.18</td>
</tr>
<tr>
<td>$MSE$</td>
<td>507.36</td>
<td>3.65</td>
<td>3.80</td>
<td>5.08</td>
<td>4.88</td>
<td>4.71</td>
<td>4.89</td>
<td>6.47</td>
<td>4.60</td>
<td>4.20</td>
</tr>
<tr>
<td>$p$</td>
<td>&lt;.001</td>
<td>.46</td>
<td>.41</td>
<td>.62</td>
<td>.23</td>
<td>.24</td>
<td>.06</td>
<td>.29</td>
<td>.68</td>
<td>.83</td>
</tr>
<tr>
<td>Cohen’s $f$</td>
<td>.22</td>
<td>.06</td>
<td>.07</td>
<td>.05</td>
<td>.09</td>
<td>.09</td>
<td>.12</td>
<td>.08</td>
<td>.04</td>
<td>.03</td>
</tr>
</tbody>
</table>

Overall, strong ecphoric experience witnesses scored higher on these testimony-relevant judgments than weak ecphoric experience witnesses, $F(9, 368)=17.68, p<.001$, Cohen’s $f=.66$. The main effect of feedback was also significant, $F(18, 736)=7.48, p<.001$, Cohen’s $f=.43$. The feedback × ecphoric experience interaction did not reach significance, $F(18, 736)=.96, p=.51$, Cohen’s $f=.15$. Consistent with past

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Cues-based inference conceptualization test 247  
DISCUSSION

As expected, confirming feedback inflated retrospective confidence and disconfirming feedback deflated retrospective confidence. More critically, disconfirming feedback had a greater impact on retrospective confidence among weak, rather than strong, ecphoric experience witnesses, results that are consistent with the cues-based inference conceptualization of the post-identification feedback effect, and inconsistent with the expectancy-violation and scale-confound hypotheses. Presumably, a target-present line-up produced a (relatively) strong ecphoric experience that served as a cue that witnesses used in their retrospective confidence judgments. This relatively strong internal cue allowed witnesses to rely more heavily on it rather than external cues to form their confidence judgments, thereby leading disconfirming feedback to have little effect. A target-absent line-up, on the other hand, produced a (relatively) weak ecphoric experience, which witnesses could not rely upon as heavily as a cue to their retrospective confidence. Thus, they relied more heavily on the cue provided by the disconfirming feedback, leading it to have a larger effect on their confidence reports.

For reasons discussed in the introduction, the interpretation of any moderating effect of ecphoric similarity on the effects of confirming feedback on retrospective confidence is necessarily ambiguous. Nonetheless, it is not unreasonable to note that although we found a trend towards greater confidence inflation among weak (rather than strong) ecphoric experience witnesses who received confirming feedback, it did not reach significance, in contrast to the findings of Bradfield et al. (2002). How do we explain this difference?

According to the cues-based inference conceptualization, ecphoric experience should moderate the feedback effect to the degree that ecphoric experience was manipulated across conditions. But ecphoric experience depends on a large number of idiosyncratic factors, including witnesses’ encoding of the criminal, the delay between the crime and the line-up, the specific photograph used in the line-up, and others and is thus expected to vary across studies. It is possible therefore that the specific materials used in Bradfield et al. (2002) led to a stronger manipulation of ecphoric similarity than those used in the current study, which would have served to increase the moderating effect of ecphoric experience on the feedback effect. For instance, perhaps the photograph of the target in Bradfield et al. produced a stronger ecphoric experience than the photograph of the target in the current study, a possibility consistent with the finding that the accurate/no feedback witnesses in Bradfield et al. reported greater confidence ($M=0.82$) than the accurate/no feedback witnesses in the current study ($M=0.74$).

If this is indeed the case, then the strength of the ecphoric experience manipulation—which can be calculated as the effect size associated with the difference between strong and weak ecphoric experience witnesses in the no feedback condition—should be greater in Bradfield et al. (2002) than in the current study. In fact, that is exactly what such an analysis demonstrates. Although the effect size of the ecphoric experience manipulation on confidence was $d=-.89$ in the current study, the corresponding effect size was $d=1.27$ in the Bradfield et al. study (43% stronger). Looking at the other testimony-relevant variables (which can also be used to estimate the magnitude of the effect of ecphoric experience) shows a similar pattern. The effect sizes associated with the ecphoric experience on every one of these nine variables was lower in the current study than in the Bradfield et al. study (the differences in the $d$s ranged from .14 to .84). It is likely therefore that the stronger manipulation of ecphoric experience in the Bradfield et al. study contributed to its greater moderating effect.

Furthermore, a recent extension of the cues-based inference conceptualization (the selective cue integration framework; Charman et al., 2010) has provided evidence that witnesses tend to be much more selective about incorporating disconfirming information than they are about incorporating confirming information (which they tend to do more or less indiscriminately). Increased selectivity about incorporating disconfirming information compared with confirming information should tend to make it easier to find moderating effects on disconfirming feedback rather than confirming feedback, which may explain why we found that exact pattern of data.

It is somewhat of a moot point, however, because the effects within the confirming feedback conditions, for reasons already expounded upon, are inherently difficult to interpret with respect to their support for the cues-based inference conceptualization—it is only the disconfirming feedback conditions that allow a clear interpretation of the status of this hypothesis. Those results are clearly consistent with the cues-based inference conceptualization and inconsistent with the expectancy-violation hypothesis or the scale-confound interpretation. It is interesting to note that although ecphoric experience moderated the effect of disconfirming feedback on confidence, it did not do so on the other testimony-relevant judgments. This is, however, not necessarily surprising for a number of reasons. Some studies have shown a similar dissociation—there are certain manipulations that affect confidence that do not also affect these other measures. For
instance, having witnesses think about the witnessing experience (how good a view they had, how confident they were, etc.) privately inflates confidence but not responses to the other measures (Wells & Bradfield, 1999). Similarly, adding highly dissimilar fillers to a line-up inflates witnesses’ confidence that their identification was correct, but has no effect on the other measures (Charman & Wells, in press). Even Bradfield et al. (2002) only found a significant feedback × ecphoric experience interaction on three of these nine variables (and that despite the fact that their ecphoric similarity manipulation was substantially stronger than ours). These findings all suggest that the process by which witnesses form confidence judgments is different than the process by which they form other testimony-relevant judgments.

One of these differences may lie in the extent to which a strong ecphoric experience overwhelms all other cues. When making confidence judgments, a strong ecphoric experience may provide ample basis for witnesses’ reports, and they thus tend to ignore other external cues (such as feedback). However, when making other testimony-relevant judgments, a strong ecphoric experience, although somewhat informative, may not be perceived as providing sufficient basis for those responses, and witnesses may therefore tend to look for additional, external cues. Consequently, ecphoric experience will moderate the effect of feedback on confidence, but not on the other testimony-relevant judgments, the pattern observed in the current study.

This explanation is also consistent with the finding that the ecphoric experience manipulation produced significant main effects on key retrospective judgments such as view and attention, a finding first noted (but not discussed at length) in Bradfield et al. (2002). Recall that ecphoric experience was a randomly assigned variable because we simply manipulated whether the culprit was in the line-up or not, which effectively determined whether they had a strong or weak ecphoric experience. Unlike confidence, for which there probably were actual differences as a function of the ecphoric experience manipulation, participants in the strong and weak ecphoric experience conditions would have had the same view and paid the same amount of attention (on average). However, witnesses’ retrospective reports of these variables in fact varied as a function of the ecphoric experience manipulation, demonstrating that ecphoric experience is a cue that witnesses use to make inferences about view and attention. This also reinforces the general proposition that witnesses do not have clear on-line memory traces for how good or poor their view was or how much or little attention they paid during witnessing. Note that it also suggests that witnesses’ reports of their view and attention might postdict their accuracy even if they are not actually recalling their view and attention but instead are basing their judgments in part on their ecphoric experience.

One of the most intriguing aspects of this work was that the administration of disconfirming feedback—a manipulation that distorts witnesses’ memories for their confidence—actually improved the confidence-accuracy correlation, a counterintuitive finding predicted by the cues-based inference conceptualization. This occurred because, by decreasing the confidence of inaccurate witnesses more than the confidence of accurate witnesses, disconfirming feedback further separated accurate from inaccurate witnesses. Despite good efforts, there has been little success in increasing the confidence-accuracy relation in eyewitness identification studies via post-identification manipulations (e.g. Robinson & Johnson, 1998); this study provides one of the only demonstrations of this kind. Of course, in no sense are we suggesting that disconfirming feedback should be given to actual eyewitnesses so as to enhance the confidence-accuracy relation. Instead, these findings are useful for our theoretical understanding of post-identification feedback effects and how feedback cues interact with ecphoric-experience cues to produce retrospective judgments. The need for a better theoretical understanding of eyewitness identification processes is increasingly apparent in a field that has been somewhat atheoretical in its approach (Charman & Wells, 2007).

Although the cues-based inference conceptualization has been discussed as a theoretical mechanism behind the post-identification feedback effect, there is no reason to assume that its basic tenet—that witnesses who have a strong, internal cue from which to derive their judgments are less influenced by other, external cues—is limited to post-identification feedback effects. In fact, it may apply to numerous disparate findings within the eyewitness literature. For instance, witnesses whose attention is divided during encoding of an event (and who thus have weaker memories) are more susceptible to post-event misinformation (Lane, 2006), shorter encoding times and longer delays (factors associated with weaker memories) result in greater suggestive influences of intervening line-ups on subsequent identification accuracy (Pezdek & Blandon-Gitlin, 2005), and children who receive a fewer number of presentations to a stimulus at encoding (resulting in weaker memories) are more susceptible to subsequent misleading information (Pezdek & Roe, 1995). Indeed, other theoretical positions have been advanced to explain these phenomena based on similar tenets, such as the outsourcing hypothesis (Smith, 1988), and the memory-trace strength theory of suggestibility (Pezdek & Roe, 1995).

In terms of implications for real-world line-up procedures, we continue to advocate the use of methods that prevent post-identification feedback altogether, whether confirming or disconfirming. Double-blind line-up administration, along with securing witness confidence and other relevant statements at the time of identification, remain the best ways to obtain these judgments in a pristine manner (Wells, 1988; Wells et al., 1998). This is especially important to the extent that witnesses have weaker internal cues on which to rely when forming their confidence judgments (e.g. when much time has passed since the time of the crime, when the witness did not have a good view of the criminal, etc.), as the cues-based inference conceptualization suggests that that is the time when they are especially vulnerable to the effects of external cues.

4 In fact, the improvement in the confidence-accuracy correlation as a result of administering disconfirming feedback speaks more to the shortcomings of the meaningfulness of confidence-accuracy correlations. Recently, some researchers have suggested that the confidence-accuracy calibration may be a better measure of the relationship between confidence and accuracy (Juslin, Olsson, & Winman, 1996; Olsson, 2000; Weber & Brewer, 2003).
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