The Selective Cue Integration Framework: A Theory of Postidentification Witness Confidence Assessment

Steve D. Charman, Marianna Carlucci, Jon Vallano, and Amy Hyman Gregory Florida International University

The current manuscript proposes a theory of how witnesses assess their confidence following a lineup identification, called the selective cue integration framework (SCIF). Drawing from past research on the postidentification feedback effect, the SCIF details a three-stage process of confidence assessment that is based largely on a conceptualization of feedback-produced confidence inflation as an attitude change phenomenon. According to the SCIF, when asked to assess their confidence, witnesses assess the strength of their internal accuracy cues (assessment stage). If weak, witnesses look specifically for external accuracy cues that can justify their identification decision (search stage). Finally, these justifying external cues are submitted to a credibility check (evaluation stage); if no credibility-undermining information is uncovered, they become integrated into one's confidence assessment. Three studies used college students as mock-witnesses to test predictions derived from the SCIF. In study 1a, lineup identification confidence was unaffected by disconfirming feedback unless that statement recanted previously administered confirming feedback, suggesting the existence of different stages in the confidence assessment process. Study 1b demonstrated that the effects of recanted feedback depend only on a discrediting of the feedback itself, and not on the discrediting of the identification. Study 2 demonstrated the generality of the SCIF by showing its predictive ability within a novel and methodologically improved postidentification cowitness feedback paradigm. Results across all three studies supported the SCIF as a theoretical framework for witness confidence assessment, suggest a new means of eliminating the feedback effect, and unite postidentification feedback and cowitness phenomena under a common theoretical umbrella.

Keywords: selective cue integration framework, postidentification feedback, confidence, cowitness, eyewitness lineups

For at least 30 years, eyewitness researchers have been interested in the confidence expressed by eyewitnesses following lineup identifications, and for good reason: No other variable seems to have as strong of an impact on jurors' evaluations of the accuracy of an eyewitness (Cutler, Penrod, & Dexter, 1990; Cutler, Penrod, & Stuve, 1988; Wells, Ferguson, & Lindsay, 1981). In fact, the legal system explicitly endorses the reliance on witness confidence as a determinant of accuracy (*Neil v. Biggers*, 1972). One of the primary research findings from the past three decades concerning eyewitness confidence is that this reliance is often unwarranted: Confidence is, under many circumstances, only a weak predictor of eyewitness accuracy (see Leippe & Eisenstadt, 2007, for an overview).

This discovery spurred much research examining the conditions under which confidence is more or less related to accuracy (e.g., Brewer, Keast, & Rishworth, 2002; Brewer & Wells, 2006; Cutler & Penrod, 1989; Sporer, Penrod, Read, & Cutler, 1995), the extent to which mock-jurors and others are influenced by a witness's confidence (e.g., Brewer & Burke, 2002; Cutler et al., 1988; Lindsay, Wells, & O'Connor, 1989; Wells, Lindsay, & Ferguson, 1979; Wells & Murray, 1984; Whitley & Greenberg, 1986), and factors that may artificially inflate witnesses' confidence (e.g., Wells & Bradfield, 1998; Shaw & McClure, 1996; Skagerberg, 2007). It is clear from much of this research that witnesses' confidence in their lineup identifications is not only a reflection of their internal, phenomenological experience during the identification itself (such as the fluency of the recognition experience, Shaw 1996; the perceived ecphoric similarity between the identified lineup member and the witness's memory of the criminal, Bradfield, Wells, & Olson, 2002). Instead, it is often based, in part, on external events, often unrelated to accuracy, that intervene between the identification and the confidence report (such as postidentification feedback, Wells & Bradfield, 1998; cowitness information, Skagerberg, 2007; postevent questioning, Shaw, 1996).

But what has been notably lacking from this research is a theoretical account of how witnesses assess and integrate internal and external sources of information to provide a final confidence report (see Brewer, Weber, & Semmler, 2007, for a discussion of the importance of generating a theoretical account of witness confidence assessment). Without a guiding theoretical framework, we struggle to answer many important questions, such as: How do witnesses decide which sources of information to use when assessing their confidence? What are the conditions under which witnesses will be influenced or not influenced by various sources of information? Once witnesses are exposed to postidentification events that inflate their confidence, is their confidence forever tainted, or can we neutralize the event's harmful effects? The

Steve D. Charman, Marianna Carlucci, Jon Vallano, and Amy Hyman Gregory, Department of Psychology, Florida International University.

Amy Hyman Gregory is now at Central Connecticut State University. Correspondence concerning this article should be addressed to Steve D. Charman, Department of Psychology, Florida International University, DM 296A, Miami, FL 33199. E-mail: charmans@fiu.edu

current paper aims to provide such a framework by proposing and testing a novel theory of postidentification witness confidence assessment.

The Cues Hypothesis: An Existing, but Incomplete, Theory of Confidence Assessment

The only existing attempt to provide a framework for understanding the process of postidentification confidence assessment is the cues hypothesis (Bradfield et al., 2002; also known as the accessibility hypothesis: e.g., Neuschatz et al., 2005). The cues hypothesis was originally developed to provide an explanation for the postidentification feedback effect-the finding that postidentification statements from a lineup administrator indicating that the witness identified the suspect inflates witnesses' retrospective memory of how confident they were at the time of the identification (Douglass & Steblay, 2006; Wells & Bradfield, 1998). It is, however, general enough to provide an account of any attempt to assess one's confidence in a previous lineup identification. According to this hypothesis, witnesses do not form online assessments of confidence during the identification process, but rather retrospectively assess what their confidence was from various accuracy cues only when asked to provide a confidence report. To the extent that they have strong internal cues to their accuracy, witnesses will rely less on external cues.

In support of the cues hypothesis, witnesses who correctly identify the perpetrator (the recognition of whom should act as a strong internal accuracy cue) are less influenced by confirming feedback than witnesses who incorrectly identify an innocent suspect from a target-absent lineup (who should tend to lack a strong internal accuracy cue because of the absence of a recognition experience) (Bradfield et al., 2002). In addition, witnesses who are asked to think about their confidence immediately after their identification (a manipulation designed to increase the strength of their internal accuracy cues) are less affected by subsequent confirming feedback than control witnesses (Wells & Bradfield, 1999).

There is, however, an accumulating body of evidence that suggests that the cues hypothesis is an incomplete account of witness confidence assessment. First, although confirming feedback has been shown to reliably inflate witnesses' retrospective confidence reports, disconfirming feedback, in which the lineup administrator tells the witness that he or she mistakenly identified a filler, has had weak and unreliable effects on witnesses' retrospective confidence reports (Wells & Bradfield, 1998, study 1; Wells, Olson, & Charman, 2003; for results from a meta-analysis, see Douglass & Steblay, 2006). Because disconfirming feedback, just like confirming feedback, is a cue to the witness's accuracy, the cues hypothesis would predict that witnesses should incorporate it into their confidence assessments, and thus the weak, inconsistent, and null results of disconfirming feedback are left unexplained by this hypothesis.

Second, external confirming cues are not always incorporated into a witness's confidence assessment. For example, although postidentification feedback produces the standard confidenceinflation effects when it is said to have originated from police officers, the same postidentification feedback fails to inflate witnesses' confidence when it is said to have originated from children (Skagerberg & Wright, 2009), suggesting that witnesses are considering the perceived credibility of the feedback-provider. Because the cues hypothesis is silent regarding any moderating effects of the credibility of the source of the cue, it cannot account for these findings in its current form.

Third, recent studies have shown that the effects of some postidentification cues can be neutralized under some conditions. Specifically, the confidence-inflating effects of postidentification feedback can be eliminated if witnesses, before making their confidence assessments, are led to question the motives of the administrator who provided the confirming feedback (Neuschatz et al., 2007; Quinlivan, Wells, & Neuschatz, in press), or are led to believe that the feedback they received was randomly generated (Lampinen, Scott, Pratt, Leding, & Arnal, 2007; studies 1 and 2). However, instructions to simply ignore previously administered feedback fail to mitigate the effect (Lampinen et al., 2007; studies 3 and 4). The cues hypothesis is silent regarding how postfeedback statements affect witnesses' tendencies toward incorporating feedback cues into their confidence assessments, and provides no explanation for why certain instructions, but not others, eliminate the effect.

Consequently, although a promising initial step in the development of a theory of confidence assessment, the cues hypothesis, as currently stated, is insufficient to account for all data regarding postidentification witness confidence assessment.

Developing a Framework

At the very least, the cues hypothesis requires a fuller and more explicit elaboration of its principles to account for these data. The current paper proposes such a framework that we call the selective cue integration framework (outlined in Figure 1), which describes three stages that witnesses progress through when making a confidence assessment. There are three general properties of this framework to note before describing it in detail. First, it maintains the core ideas of the cues hypothesis, and thus may be thought of as an extension of the cues hypothesis, as opposed to an alternative, competing theory. Second, it assumes that confidence assessment involves integrating various cues together to form a final confidence statement. Third, the selective cue integration framework is based largely on the conceptualization of confidence assessment as being analogous to a process of attitude assessment, and postidentification information as being analogous to a persuasive message. Thus, witnesses have an initial belief (their prefeedback confidence) that is based on prior experience (the lineup identification; the witnessed event itself), and are exposed to a persuasive message (such as postidentification feedback) that affects their belief (ultimately producing their postfeedback confidence). Consequently, the three stages of the selective cue integration framework are all theoretically grounded within an attitude change perspective. These stages are discussed in more detail below.

The assessment stage. The assessment stage is essentially equivalent to the cues hypothesis, and as such, is primarily characterized by two claims. First, confidence is not assessed until witnesses are asked to generate a confidence report. This claim is consistent with an attitude framework. Many attitude researchers are increasingly recognizing that many of our attitudes do not simply exist in the recesses of our memories, lying in wait until accessed. Instead, they propose a constructionist framework of



Figure 1. The selective cue integration framework.

attitudes: We construct and infer our attitudes only when we need to report them (Schwartz, 2007; Schwartz & Bohner, 2001). Thus, people's reported attitudes can change depending on their interpretation of the context (e.g., Schwartz & Clore, 1983; Valins, 1966; Wells & Petty, 1980). Thinking of confidence assessment within this constructionist framework leads us to think of witnesses as not simply passively accessing any preexisting identification confidence, but as actively constructing and inferring their confidence only when asked to report it. Consequently, events that occur after an identification, but before the confidence assessment, may become integrated into a witness's confidence report (Skagerberg, 2007; Wells & Bradfield, 1998).

The second claim made within the assessment stage is that strong internal cues to confidence mitigate reliance on external cues to confidence, a claim also consistent with an attitude framework. One of the fundamental findings from the attitude change literature is that strong attitudes, often conceptualized as attitudes that are highly accessible (i.e., that come to mind easily, Bassili, 1996; Fazio, 1995), are more stable over time and more resistant to persuasion than weak attitudes (e.g., Petrocelli, Tormala, & Rucker, 2007; for overviews, see Chaiken, Pomerantz, & GinerSorolla, 1995; Eagly & Chaiken, 1995; Petty, Haugtvedt, & Smith, 1995). Analogously, witnesses who have a highly accessible accuracy cue should be less affected by subsequent information than witnesses who do not have a highly accessible accuracy cue. Indeed, strong internal cues mitigate the effect of subsequent feedback (Bradfield et al., 2002; Wells & Bradfield, 1999). Thus, when witnesses attempt to reconstruct their confidence, the selective cue integration framework states that they first enter the assessment stage, in which they assess their internal cues; to the extent that these internal cues are highly accessible, witnesses will immediately output their confidence. However, to the extent that these internal cues, and will proceed to the second stage of the selective cue integration framework.

The search stage. Another extensively supported finding of the attitude change literature is that the process by which people search for and evaluate new information depends on whether that information supports or challenges their preexisting beliefs, such that people (a) tend to selectively seek out evidence that confirms, rather than disconfirms, their preexisting beliefs (Nickerson, 1988); and (b) tend to cursorily accept confirming information, but heavily scrutinize disconfirming information to attempt to reject it (e.g., Edwards & Smith, 1996; Lord, Ross, & Lepper, 1979). These biases are especially prevalent when people have a strong interest in reaching a particular conclusion (Ditto & Lopez, 1992; Kunda, 1990). Consequently, this biased integration of information often leads to overconfidence in one's conclusions (Koriat, Lichtenstein, & Fischhoff, 1980).

A slightly different approach explains people's tendency to be overconfident as resulting from a natural motivational tendency to see oneself as competent and accurate about one's judgments (Blanton, Pelham, DeHart, & Carvallo, 2001). Because uncertainty would challenge this positive self-view, people engage in cognitive processes to convince themselves that their previous decisions were accurate. This explanation has its roots in cognitive dissonance theory, according to which people have a natural tendency to justify their past behaviors (Cooper & Fazio, 1989; Festinger & Carlsmith, 1959; Petty & Wegener, 1998), especially when made publicly (Pallak & Cummings, 1976; Stone, Aronson, Crain, Winslow, & Fried, 1994).

These two theoretical approaches to overconfidence can both aid in our understanding of the confidence inflation displayed by eyewitnesses who receive postidentification feedback. Witnesses have a preexisting belief (i.e., that their identification is accurate), and, given their prior behavioral commitment to that belief (i.e., they freely chose to identify that lineup member), should have a vested interest to maintain and justify that belief. Consequently, they should be particularly likely to accept information that confirms that belief (such as postidentification statements suggesting their identification was correct) and to scrutinize, and ultimately dismiss, information that does not confirm that belief (such as postidentification statements suggesting their identification was incorrect). This should be especially true to the extent that selectively accepting confirmatory information serves to reduce uncertainty in one's lineup identification, thus obviating any cognitive dissonance that might be produced if the witness were forced to admit that he or she might have falsely identified an innocent person.

The selective cue integration framework thus proposes that witnesses who are looking for external accuracy cues enter the search stage, in which they selectively seek out and integrate cues that support and justify their identification decision as opposed to cues that would question their identification. This selective integration of confirming, as opposed to disconfirming, information will lead witnesses to be naturally overconfident in their accuracy following the presentation of confirming feedback. Note that this biased information processing account explains the asymmetry observed in previous studies whereby confirming, but not disconfirming, feedback influences witnesses' confidence reports (Douglass & Steblay, 2006).

The evaluation stage. Although people are less likely to scrutinize information that supports, rather than questions, their preexisting beliefs, it is unlikely that people mindlessly incorporate any and all possible supportive cues that are available to them. The attitude change literature has shown that the persuasive impact of a message (as measured via the amount of attitude change that one experiences as a result of hearing that message) can be eliminated if it is accompanied by a discounting cue such as low source credibility (Hovland, Lumsdaine, & Sheffield, 1949; Kumkale & Albarracin, 2004). People are especially likely to judge a message

by the credibility of its source when they are not motivated to scrutinize the message content itself (Petty, Cacioppo, & Goldman, 1981), which should be the case when people are evaluating a message that they are already inclined to agree with.

Thus, the selective cue integration framework proposes that after finding cues that support their identification in the search stage, witnesses enter the evaluation stage in which they tend to evaluate each confirming cue, at least cursorily, for its possible credibility. Cues originating from a high credibility source will be integrated into one's assessment whereas cues originating from a low credibility source will not. This credibility assessment can explain why the feedback effect is eliminated if witnesses are led to believe that the feedback administrator had questionable motives for providing the feedback (Neuschatz et al., 2007; Quinlivan et al., in press), that the feedback they received was randomly generated (Lampinen et al., 2007; studies 1 and 2), or if the feedback originated from a low-credibility source (Skagerberg & Wright, 2009). In addition, it explains why the feedback effect fails to be reduced if witnesses are simply told to ignore the feedback (Lampinen et al., 2007; studies 3 and 4), and for why the effectiveness of a credibility-undermining statement in eliminating the feedback effect does not depend on witnesses' attributions for why the lineup administrator provided the erroneous feedback (Quinlivan et al., in press).

A key point about the evaluation stage is that it is credibilityundermining cues, not credibility-augmenting cues, that affect witnesses' confidence. This is because witnesses who receive a confirming cue in the absence of any credibility cues should nonetheless be predisposed to integrate that cue into their confidence assessment because of people's natural tendency to (a) accept, with little scrutiny, information that supports their preexisting beliefs (Edwards & Smith, 1996; Nickerson, 1988); and (b) assume other people's statements are true and informative (Grice, 1975). Consequently, the additional effect of any augmenting cue should be minimal because of ceiling effects, whereas the additional effect of any discounting cue should be substantial, potentially eliminating the effect of the confirming cue. A recent metaanalysis of some of the attitude change literature has demonstrated just this asymmetry: Compared to messages not accompanied by credibility cues, messages accompanied by a credibility-enhancing cue are no more persuasive, but messages accompanied by credibility-undermining cues are significantly less persuasive (Kumkale & Albarracin, 2004). Thus, a confirming cue will only be integrated into a witness's confidence assessment if no credibility-undermining information is uncovered in this evaluation stage.

Testing the Selective Cue Integration Framework

As previously discussed, independent evidence already exists for each of the individual stages of the proposed framework. What is novel about the framework is (a) the conceptualization of confidence assessment as an attitude change phenomenon, (b) the integration of the stages into one cohesive framework, and (c) the scope of the framework. Studies 1a and 1b use a form of recanted postidentification feedback to test predictions derived from the framework regarding the existence of multiple stages within the confidence assessment process. Study 2 extends the scope of the framework by using a novel paradigm to test multiple predictions that stem from the framework within the context of postidentification cowitness information. Because specific tests of the cues hypothesis have already been conducted (Bradfield et al., 2002), we focus our tests of the selective cue integration framework on those stages that are nonredundant with the cues hypothesis (i.e., the search stage and the evaluation stage).

Study 1a

One of the novel predictions of the selective cue integration framework is that witnesses' confidence can be inflated (by information that confirms their prior identification), but not deflated, in the search stage, but can be deflated (by a credibility-undermining cue), but not inflated, in the evaluation stage. Therefore, information that undermines a witness's identification should fail to reduce confidence if presented in the search stage, but the exact same information should succeed at reducing confidence if presented in the evaluation stage. Study 1a provides a test of this prediction. Specifically, witnesses were exposed to a simple statement from the lineup administrator that the witness's identification was incorrect. According to the selective cue integration framework, such a statement should, when presented on its own, tend to be ignored because it is presented to witnesses who are in the search stage, and should fail to affect witnesses' confidence. However, if this exact same statement is presented at some point after a statement that had initially provided confirming information (e.g., it is provided under the guise of recanting the confirming feedback), it should tend to undermine the confirming cue because it is being presented to witnesses who are in the evaluation stage. Consequently, it should significantly decrease witnesses' confidence (more precisely, it should eliminate the confidence-inflating effects of the confirming feedback).

Method

Table 1

Dependent Measures Questionnaire

Participants and materials. Two hundred twenty-six participants (55 males and 171 females; age range: 17–47 years, mean

age = 21 years) were recruited from the research pool of undergraduate psychology students at a southeastern university.

Video. Participants viewed a 53-s video in which a young man stole money from an unattended purse. The man looked directly into the camera when he noticed he was being watched. At this point the man fled the scene. The thief's face was clearly visible in the video.

Lineup. Participants viewed a target-absent lineup comprised of six individuals that all matched the general description of the perpetrator.

Dependent measures. After participants made an identification and received feedback, they completed a memory questionnaire about their recollection of the mock crime, which included questions about their certainty in their identification and other testimony-relevant judgments (see Table 1). Participants used a 10-point Likert scale to answer each question.

Procedure. All participants were tested individually in small rooms. Each participant watched the mock crime on a computer. When the video finished the experimenter informed participants that they were witnesses to a crime and that it was their job to pick out the criminal from a lineup. Consistent with most feedback studies, they were not explicitly provided with a "not there" option. Participants were then shown a target-absent lineup on the computer screen and their identification was recorded. The experimenter provided feedback (or not, in the control condition) to all participants, left the room for ~ 1 min, and returned to administer the memory questionnaire. Participants were randomly assigned to one of four feedback conditions: Control (in which no feedback was provided), confirming (in which the experimenter said "Good! You identified the suspect."), disconfirming (in which the experimenter said "Actually, the suspect was someone else."), or recanted (in which the experimenter initially provided confirming feedback, then upon returning to administer the memory questionnaire stated "Actually I made a mistake. You identified the wrong person. The suspect was someone else."). When all materials were completed, participants were debriefed.

Dependent measures question	Scale
At the time you identified the person in the lineup, how certain were you that the	
person you identified from the lineup was the person you saw in the video?	0% (not at all certain) to 100% (totally certain)
How good a view did you get of the person in the video?	1 (very poor) to 10 (very good)
How much attention were you paying to the person's face while viewing the video?	1 (none) to 10 (my total attention)
For how long would you estimate the man's face was in view during the video? How well were you able to make out specific features of the person's face from the	1 (very little time) to 10 (quite a bit of time)
video?	1 (not at all) to 10 (very well)
How far away was the man in the video?	1 (not far) to 10 (very far)
To what extent to you feel that you had a good basis (enough information) to make	
an identification?	1 (no basis at all) to 10 (a very good basis)
How easy or difficult was it for you to figure out which person in the lineup was the	(, , , ,
person you saw in the video?	1 (extremely easy) to 10 (extremely difficult)
After you were first shown the lineup, how long do you estimate it took you to make an identification?	1 (I needed almost no time to pick him out) to 10 (I had to look at the photos for a long time to pick him out)
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?	1 (not at all willing) to 10 (totally willing)
Generally, how good is your recognition memory for the faces of strangers you have	
encountered on only one prior occasion?	1 (very poor) to 10 (excellent)
How clear is the image you have in your memory of the person you saw in the	
video?	1 (not at all clear) to 10 (very clear)

Results and Discussion

Eight of the 226 participants (3.5%) did not make an identification, and therefore could not be given feedback. All analyses were conducted on the remaining 218 participants. Mean scores for all variables are displayed in Table 2. The typical feedback effect was replicated. Confirming feedback inflated retrospective confidence (M = 7.2) compared to control (M = 4.7), t(107) = 5.83, p < .001, d = 1.13. Disconfirming feedback, on the other hand, had no significant effect on confidence (M = 4.9) compared to control, t(108) = .47, p = .64, d = .09. However, the same disconfirming statement did significantly reduce confidence when it recanted a previously administered confirming statement: Retrospective confidence of participants who received recanted feedback (M = 5.4) was significantly lower than the retrospective confidence of witnesses who received confirming feedback, t(105) = 3.88, p < .001, d = .76, and was not significantly different from the retrospective confidence of control witnesses, t(108) = 1.38, p = .17, d = .27. A linear contrast indicated that recanted feedback reduced confidence (compared to confirming feedback) more than disconfirming feedback reduced confidence (compared to the control condition), t(213) = 3.03, p = .003, d =.42.

A composite score was created by averaging the remaining testimony-relevant measures (with relevant variables reversecoded so that higher numbers indicated a better witnessing experience). Consistent with the feedback effect, confirming feedback significantly inflated this score (M = 6.3) relative to control (M =5.0), t(108) = 4.81, p < .001, d = .93. Disconfirming feedback did not significantly deflate this score (M = 4.7) relative to control, t(109) = 1.37, p = .17, d = .26. However, the disconfirming statement did significantly reduce the composite score when it recanted a previously administered confirming statement: The composite score was significantly lower among participants who received recanted feedback (M = 5.1) compared to witnesses who received confirming feedback, t(105) = 4.04, p < .001, d = .79. The composite score among witnesses who received recanted feedback was not significantly different from the composite score among control witnesses, t(109) = .36, p = .72, d = .07.

Results were consistent with predictions made by the selective cue integration framework. Specifically, a disconfirming statement on its own failed to significantly reduce confidence relative to a control condition, but the same statement did significantly reduce confidence when presented following a confirming cue, returning witnesses' confidence to its prefeedback levels. The simplest interpretation of these data is that the disconfirming statement was ignored when witnesses were in the search stage, thus failing to produce any effect on their confidence, but was taken into account when witnesses were in the evaluation stage, where it was used to invalidate a previously administered confirming cue.

Study 1b

Out of necessity, study 1a used a form of recantation that mirrored disconfirming feedback; the recanted feedback explicitly instructed participants that their identification was incorrect. However, this leaves unresolved the method by which recantation eliminates confidence inflation, as this specific recantation statement not only recanted the feedback, but also served to discredit the identification itself as it definitively implied that the witness's identification was incorrect. It is unclear then as to whether the effect of recantation was the result of the discrediting of the feedback or the discrediting of the identification itself.

According to the selective cue integration framework, recantation eliminates the feedback effect in the evaluation stage because it undermines the credibility of the feedback, leading witnesses to avoid integrating the feedback into their confidence assessment. Whether the recantation informs the witness that his or her identification was incorrect is irrelevant. For the selective cue integration framework to be a plausible account of the feedback effect, we would need to show that the feedback effect is eliminated following a form of recantation in which only the feedback, and not the identification itself, is discredited. Study 1b tested this prediction.

Method

Participants and materials. One hundred four participants (35 males and 69 females; age range: 17-32 years, mean age = 20 years) were recruited from the research pool of undergraduate psychology students at a southeastern university to be mockwitnesses. Participants were shown the same mock crime, the same lineups, and were given the same dependent measures as participants in study 1a.

Procedure

The procedure in study 1b was identical to the procedure in study 1a except for the feedback condition. Following their iden-

Table 2

Mean Retrospective Reports (SDs in Parentheses) for Confidence and Other Testimony-Relevant Judgments as Function of Feedback for Study 1a

	Measure											
Feedback	Certain	View	Attention	Face	Features	Far	Basis	Easy	Long	Testify	Memory	Clear
Control $(n = 57)$ Confirming $(n = 53)$ Disconfirming $(n = 54)$ Recanted $(n = 54)$	4.7 (2.5) 7.2 (1.9) 4.9 (2.6) 5.4 (2.8)	6.3 (2.2) 7.2 (1.7) 6.0 (2.2) 5.9 (2.1)	4.8 (2.2) 6.1 (2.1) 4.5 (2.1) 5.5 (2.4)	5.2 (2.0) 5.6 (2.1) 4.5 (2.0) 4.4 (1.8)	4.4 (2.0) 5.5 (2.0) 4.1 (1.6) 4.4 (2.2)	6.7 (1.9) 6.9 (1.8) 6.7 (1.7) 7.0 (1.7)	4.8 (2.1) 6.7 (1.9) 4.9 (2.3) 4.8 (2.5)	4.2 (2.1) 5.7 (2.1) 4.0 (2.3) 4.4 (2.3)	4.8 (1.9) 6.2 (2.2) 5.3 (2.0) 5.1 (2.4)	3.5 (2.2) 5.9 (2.5) 2.9 (2.3) 3.9 (2.4)	5.8 (2.5) 6.8 (2.1) 4.9 (2.6) 6.4 (2.5)	4.6 (1.9) 6.3 (2.0) 3.8 (2.0) 4.5 (2.5)

Note. Certainty was measured on a 0-100% scale and converted to a 0-10 score. All other measures were measured on a 1-10 scale, with greater values representing a better witnessing experience. Far, Easy, and Long are reverse-scored.

tification, participants were randomly assigned to receive either no feedback (the control condition), confirming feedback ("Good! You identified the suspect"), or one of two types of recanted feedback. In all conditions, the experimenter provided feedback (or not, in the control condition), left the room, and returned 1 min later to administer the memory questionnaire. Participants in the recanted feedback conditions initially received confirming feedback, but were then given one of two recantation statements when the experimenter returned to administer the questionnaire. Some recanted feedback participants were given a feedback-only recantation in which the credibility of the feedback was undermined but the participant's identification was not said to be incorrect ("Actually I made a mistake. I thought you had a different lineup. Forget what I said earlier because I actually don't know who the criminal was so I don't know if you are right or wrong about your identification."), and the remaining recanted feedback participants were given a feedback-and-identification recantation in which the credibility of the feedback was undermined and the participant's identification was said to be incorrect ("Actually I made a mistake. I thought you had a different lineup. Forget what I said earlier because you actually identified the wrong person. The suspect was someone else."). All participants then responded to the memory questionnaire. When all materials were completed participants were debriefed.

Results and Discussion

One participant (1%) did not make an identification and thus could not be assigned to a feedback condition. All analyses were performed on the remaining 103 participants. Mean scores for confidence and other testimony-relevant variables are displayed in Table 3. Once again we replicated the postidentification feedback effect. Confirming feedback significantly inflated witnesses' retrospective confidence (M = 7.0) relative to control (M = 4.8), t(55) = 3.23, p = .002, d = .87. Replicating study 1, the feedback-and-identification recentation eliminated this effect: Confidence among witnesses who received this type of recanted feedback was significantly lower (M = 5.0) than confidence among witnesses who received confirming feedback, t(51) = 3.05, p = .004, d = .85, and did not differ significantly from confidence among control witnesses, t(52) = .26, p = .81, d = .07.

More importantly for the purposes of this study, however, the feedback-only recantation also eliminated the effect of confirming feedback: Confidence among witnesses who received the feedbackonly recantation (M = 5.6) was significantly lower than confidence among witnesses who received confirming feedback, t(47) = 2.05, p = .05, d = .60, and did not differ significantly from confidence among control witnesses, t(48) = 1.09, p = .28, d = .31. In fact, confidence among witnesses who received the feedback-only recantation did not differ significantly from confidence among witnesses who received the feedback-and-identification recantation, t(44) = .90, p = .38, d = .27, suggesting that both types of recanted feedback were equally effective in eliminating the feedback effect.

A composite score was created by averaging the remaining testimony-relevant measures (with relevant variables reversecoded so that higher numbers indicated a better witnessing experience). Confirming feedback significantly inflated this composite score (M = 6.6) compared to control (M = 5.1), t(55) = 4.51, p < 6.6.001, d = 1.22. This composite score was significantly lower among witnesses who received the feedback-and-identification recantation (M = 5.4) than among witnesses who received confirming feedback, t(51) = 3.45, p = .001, d = .97, and did not significantly differ from the score of control witnesses, t(52) =.91, p = .37, d = .25. The composite score was also significantly lower among witnesses who received the feedback-only recantation (M = 5.2) than among witnesses who received confirming feedback, t(47) = 4.33, p < .001, d = 1.26, and did not significantly differ from the score of control witnesses, t(48) = .25, p =.81, d = .07, or from the score of witnesses who received the feedback-and-identification recantation, t(44) = .62, p = .54, d =.19.

These results indicate that recantation of the feedback itself was sufficient to eliminate confidence inflation caused by confirming feedback, despite not discrediting the accuracy of the witness's identification. This suggests that recantation operates via a discrediting of the feedback, and not via a discrediting of the accuracy of the identification, consistent with predictions of the selective cue integration framework.

Study 2

The primary contribution of studies 1a and 1b lies in the demonstration that the same information (a statement that the witness "identified the wrong person") is used differently, and has different effects on witnesses' confidence, dependent on the stage witnesses are in when the information is encountered. Although consistent

Table 3

Mean Retrospective Reports (SDs in Parentheses) for Confidence and Other Testimony-Relevant Judgments as Function of Feedback for Study 1b

	Measure											
Feedback	Certain	View	Attention	Face	Features	Far	Basis	Easy	Long	Testify	Memory	Clear
Control $(n = 29)$	4.8 (2.6)	6.0 (2.0)	5.8 (2.0)	4.6 (1.7)	4.1 (1.6)	6.6 (1.5)	4.8 (2.0)	4.6 (2.0)	5.3 (1.7)	3.4 (2.3)	5.8 (2.0)	5.0 (2.0)
Confirming $(n = 28)$ Feedback-only recantation	7.0 (2.6)	7.7 (1.5)	6.8 (2.6)	4.9 (2.4)	6.1 (2.2)	6.8 (1.4)	7.2 (1.7)	6.4 (1.9)	6.7 (1.7)	6.3 (2.3)	7.1 (2.0)	6.5 (1.6)
(n = 21) Feedback-and-ID	5.6 (2.3)	6.4 (2.0)	5.3 (1.6)	4.9 (1.9)	4.4 (1.7)	6.3 (1.7)	5.3 (2.0)	4.3 (1.8)	5.4 (1.9)	3.9 (2.6)	5.7 (1.7)	4.9 (2.2)
recantation $(n = 25)$	5.0 (2.3)	6.5 (2.2)	6.2 (2.1)	5.2 (2.2)	4.8 (2.2)	6.4 (1.3)	5.7 (2.4)	4.6 (2.0)	5.0 (2.2)	3.8 (2.8)	6.3 (2.7)	4.8 (2.8)

Note. Certainty was measured on a 0-100% scale and converted to a 0-10 score. All other measures were measured on a 1-10 scale, with greater values representing a better witnessing experience. Far, Easy, and Long are reverse-scored.

with predictions made by the selective cue integration framework, these data nonetheless only provide preliminary support for the framework. One critique of these empirical tests, for example, could be that because the framework was created in part to account for postidentification feedback data, testing it using a postidentification feedback paradigm is simply using data the framework was generated to explain as evidence for the framework. A much stronger test of the framework would require testing it in a novel situation using a novel paradigm to examine a phenomenon that did not form the basis of the framework in the first place. Study 2 provides such a test. Using a phenomenon other than postidentification feedback also widens the scope of the framework, allowing for a test of its generality.

Because the selective cue integration framework is a general framework of confidence assessment, it is aimed at explaining any phenomenon in which witnesses make an identification, are exposed to information, and are then asked to assess their confidence. Although the majority of research examining postidentification influence has focused on feedback provided by the lineup administrator, there are a small handful of studies that have examined a different form of postidentification influence: Cowitness information. Specifically, some studies have shown that learning about the identification decisions of one or more cowitnesses influences witnesses' confidence in their own previously made lineup identification (Luus & Wells, 1994; Semmler, Brewer, & Wells, 2004; Skagerberg, 2007). Because this research involves the presentation of postidentification information to witnesses before assessing their confidence, it falls under the purview of the selective cue integration framework.

Although cowitness feedback is superficially similar to administrator-provided postidentification feedback (i.e., witnesses make a lineup identification, receive feedback, and then assess their confidence), the two are conceptually distinct: Administrator feedback is provided by someone who is expected to know with certainty the identity of the suspect, whereas cowitness feedback is provided by someone who cannot necessarily be expected to know with certainty the identity of the suspect. A witness is free to ignore cowitness feedback by attributing it to someone who is simply wrong, an option that is not as readily available to a witness who receives administrator feedback. This difference is important, as it is not obvious that the ways in which witnesses respond to cowitness feedback will be similar to the ways in which they respond to administrator feedback, and therefore using a cowitness paradigm provides a particularly strong test of the selective cue integration framework.

The nonobviousness of how witnesses will respond to cowitness information is further exemplified by the fact that (a) there is a dearth of research on the postidentification influence of cowitnesses, and (b) the research that has been conducted has used methodologies that have prohibited researchers from making strong conclusions about the nature of postidentification cowitness influence. For example, Skagerberg (2007) had witnesses make independent lineup identifications and then tell each other their identification, and showed that witnesses who agreed with one another exhibited higher levels of confidence than witnesses who disagreed with one another. However, this paradigm does not include a control condition in which participants did not hear about the identification, and it is thus impossible to test whether confirming cowitness feedback had a greater effect than disconfirming cowitness feedback (as would be predicted by the selective cue integration framework). In addition, because the experimenter has little control over the cowitness, it is impossible to manipulate characteristics of the cowitness that might undermine the credibility of the feedback provided by that cowitness, a requirement to test predictions from the evaluation stage of the selective cue integration framework.

Another paradigm used to investigate postidentification cowitness effects consists of simply telling witnesses following their lineup identification that one or a number of cowitnesses made the same or a different lineup identification as them (Luus & Wells, 1994; Semmler et al., 2004) before assessing their confidence. Although such a paradigm allows for a control condition in which participants do not receive cowitness feedback, this methodology suffers from another shortcoming: It may produce effects that are not the result of cowitness influence per se. This may occur for two reasons. First, the cowitness information is actually delivered by the experimenter (or by a computer), not by the cowitnesses themselves, and may therefore be perceived as having the experimenter's tacit approval (after all, why else would the experimenter provide such cowitness feedback unless it was accurate?). Second, the sheer number of cowitnesses who are reported as having ostensibly made the same identification can be quite large (as high as 84: Semmler et al., 2004).

Both of these factors should tend to force witnesses to accept the feedback. However, for reasons mentioned earlier, a methodology that, in effect, forces witnesses to accept the cowitness feedback is not one that allows for the study of cowitness influence per se. This is especially problematic with respect to any test of the selective cue integration framework, because the framework's final stage— the evaluation stage—involves witnesses' tendencies to submit the feedback to a credibility check. If methodological constraints force witnesses to accept the feedback, it is impossible to assess their ability to perform this final credibility check.

Because these are the only two paradigms that have been used to study the postidentification cowitness effect, there are currently no data on the topic that can speak to predictions made by the selective cue integration framework. Clearly, a new cowitness paradigm is needed. Study 2 uses a novel cowitness influence paradigm to test predictions made by the selective cue integration framework.

Keeping in mind that such a paradigm requires, at a minimum, (a) a control condition in which some participants do not learn about the identification of a cowitness (to test for the framework's prediction of asymmetric effects of confirming and disconfirming cowitness information); (b) the ability to control the credibility of the cowitness (to test the framework's prediction of the asymmetric effects of credibility-enhancing and credibility-undermining information); and (c) cowitness information that comes directly from a cowitness (to ensure cowitness, and not experimenter, effects), we developed the following paradigm. Participants viewed a crime alongside a cowitness (in fact, a confederate of the experimenter). The participant then made a lineup identification out loud. The confederate cowitness then made a lineup identification that was either the same as the participant's, different from the participant's, or was made silently so that the participant could not hear it. Finally, the participant privately assessed their confidence and responses to other testimony-relevant judgments.

To manipulate the credibility of the external cue, the cowitness made the identification with either (a) a spontaneous statement of high confidence, (b) a spontaneous statement of low confidence, or (c) no statement of confidence. A cowitness who makes an identification but is not very confident about it should tend not to be credible, whereas a cowitness who makes an identification and is extremely confident should be much more credible. An advantage of using confidence as a manipulation of the credibility of the cowitness is that none of the extant postidentification feedback studies that have manipulated the credibility of the feedback have used confidence of the person providing the feedback as their manipulation. If low cowitness confidence has the same effect on witnesses' tendencies to use postidentification feedback as other different manipulations, it would provide convergent evidence that it is the undermining of the credibility of the feedback, and not some specific manipulation per se, that is important in eliminating any confidence-inflation effects.

The design of study 2, and the predictions made by the selective cue integration framework, can be seen in Table 4. According to the selective cue integration framework, when participants are asked to assess their confidence in their lineup identification, they should assess their internal cues. Because the criminal was seen only briefly under less-than-ideal conditions, and because the lineup was always target-absent (which should obviate a strong recognition experience), these internal cues should be relatively weak. Consequently, witnesses will search for external cues. Because people are motivated to find cues that confirm, rather than disconfirm, their previous identification, participants who overhear a cowitness identify the same person as them should be inclined to use that information as a cue to their own accuracy, thus inflating their confidence (Hypothesis 1). Participants who overhear a cowitness identify a different person as them should be inclined to dismiss that information, thus having no effect on their confidence (Hypothesis 2). We expect these effects to occur specifically when there is no information present that could undermine the credibility of the feedback.

When such credibility-undermining information does exist, however, the selective cue integration framework makes somewhat different predictions. Specifically, when participants overhear a cowitness make a different identification as them, they will ignore it, and thus not proceed to the evaluation stage. Consequently, the credibility of the feedback is never evaluated, and should have no effect on participants' confidence (Hypothesis 3). However, when participants overhear a cowitness make the same identification as them, they will subsequently submit it to a credibility check. Because this credibility check is aimed at uncovering credibility-

Table 4

Selective Cue Integration Framework Predictions for Witness Confidence as a Function of Cowitness Identification and Cowitness Confidence for Study 2

	Cowitness confidence						
Cowitness identification	High	Low	Unknown				
Same as participant's Different from participant's Control	High Moderate —	Moderate Moderate	High Moderate Moderate				

undermining information, signs suggesting that the feedback is not credible (i.e., low cowitness confidence) should eliminate the effect of the confirming cowitness information (Hypothesis 4); signs suggesting that the feedback is credible, however (i.e., high cowitness confidence), should have no additional confidenceinflating effect (Hypothesis 5).

Method

Participants. Two hundred fifty-two participants (50 males and 150 females [two participants did not report their sex]; age range: 17-60 years, mean age = 21 years) were recruited from the research pool of undergraduate psychology students at a southeastern university.

Design. The design of the study is a 2 (cowitness identification: same, different) \times 3 (cowitness confidence: high, low, unknown) +1 (in which participants do not overhear the cowitness identification or the cowitness's confidence). Witnesses viewed a mock crime alongside a confederate cowitness, and then made a lineup identification. Subsequently, they overheard the confederate cowitness make either the same identification as them or a different identification than them (or did not hear the cowitness's identification). The confederate cowitness made this identification with either indicators of high confidence, indicators of low confidence, or without any indicators of confidence. All participants then recorded their confidence and responded to other testimonyrelevant measures privately.

Materials and Procedure

Participants were randomly assigned to all conditions. Upon arrival, the participant waited in a waiting area. Soon after, another person, ostensibly a participant but in reality a confederate, arrived and waited alongside the participant. Shortly after the confederate arrived, the experimenter brought both individuals into a small room and showed them a video of a man planting a bomb on the roof of a building. Both the participant and confederate watched the video simultaneously on the same TV screen. Immediately after the video, the experimenter informed participants that they were now witnesses to a crime and would be individually attempting an identification from a lineup. A copy of this lineup was held up while the experimenter said this to convince the participant that the confederate would be viewing the same lineup. The lineup contained six individuals, none of whom were the bomber from the video, above a number (1-6) corresponding to each lineup member.

The experimenter always began the lineup identification task with the participant. The lineup identification task was always done at a table in front of each witness, which required the participant and confederate to have their backs to each other, and the experimenter always stood at a position that would block the confederate from viewing the lineup. The experimenter placed the lineup in front of the participant and instructed the participant to "select the person you think planted the bomb on the roof by saying the number next to that lineup member." Once the participant made an identification, the experimenter repeated the number of the identified lineup member out loud (by saying "number __?" and waiting for confirmation). The experimenter then presented the same lineup in front of the confederate (standing in such a way as to block the participant's view of the lineup) and instructed the confederate to make an identification (using the same instructions given to the participant).

Identification manipulation. Depending on the participant's assigned condition, the confederate either verbally identified the same lineup member as the participant (*same identification* condition), verbally identified a different lineup member as the participant (the identity of whom had been predetermined randomly for each participant; *different identification* condition), or simply tapped the lineup without making a verbal identification (*control* condition). In the same identification and different identification the experimenter said "Number __?" In the control condition, the experimenter said "That one?" and pointed ambiguously at the lineup.

Confidence manipulation. In the same identification and different identification conditions, the confederate made the identification with either high confidence, low confidence, or without indicating any confidence (in the control condition, confederates never indicated confidence). In the low confidence condition, the confederate waited a few seconds before making the identification and then stated hesitantly "it's number ____, I guess?" When the experimenter repeated back "Number __?" The confederate stated "Yeah but I'm not sure." In the high confidence condition, the confederate confidently and almost immediately identified a lineup member by stating "definitely number __." When the experimenter repeated back "Number __?" The confederate stated "Yeah I'm sure." In the unknown confidence condition, the confederate identified a lineup member by tapping the lineup. This was done to ensure that the participant could not infer the confederate's confidence from vocal inflection. (Recall that in the same identification and different identification conditions the experimenter stated "Number __?" which allowed the participant to know who the confederate had identified.) All identification and confidence statements could be easily overheard by the participant.

Upon completion of the lineup identification task, participants privately responded to two questionnaires. (Participants believed that the confederate was simultaneously filling out the same questionnaires.) Participants first answered a series of questions about their confidence in their identification and other variables related to the witnessed event and identification process. The first question served as the main dependent measure, which asked participants "how certain were you that the person you identified from the photos was the person you saw in the video?" from 0% (not at all certain) to 100% (totally certain). All other questions were answered on a 1-10 scale (see Table 1). Next, participants were given a manipulation check questionnaire, which asked them to (a) indicate whether the cowitness made the same identification as them, a different identification as them, or whether they did not hear the cowitness's identification, and (b) rate how confident they believed the cowitness was in his or her identification on a 7-point scale (1 = not very confident, 7 = highly confident). Participants were then debriefed.

Results

Of the 252 participants in this study, 12 (5%) declined to make an identification. Because these participants could not be assigned to a same ID/different ID condition, their data were excluded from the analyses, leaving 240 participants. **Manipulation checks.** Because the confederate cowitness did not make the lineup identification and provide a confidence statement directly to the participant, but gave it to the experimenter, it is possible that some participants may not have overheard the cowitness's response simply because they were not paying attention. However, a proper test of the selective cue integration framework requires the participant to be aware of an external source of influence (i.e., to have overheard the cowitness). Thus, we conducted two manipulation checks to screen out participants who were not paying attention to the cowitness. At the end of the study, all participants were asked to indicate whether the cowitness identified the same person as them, a different person than them, or whether they did not hear who the cowitness identified. Twentyseven participants (11%) responded incorrectly to this manipulation check, and were not included in the data analysis.

All participants were also asked to indicate the cowitness's confidence on a 7-point scale (from 1 = not at all confident to 7 =extremely confident). Participants' responses to this question were treated as incorrect if (a) the cowitness had expressed high confidence and the participant indicated a cowitness confidence score of 1, 2, or 3; or (b) the cowitness had expressed low confidence and the participant indicated a cowitness confidence score of 5, 6, or 7. Twenty-one participants (9%) responded incorrectly to this manipulation check, and were consequently not included in the data analysis. Thus, all analyses were conducted on the remaining 192 participants (79 males and 113 females; mean age = 21 years) who passed both manipulation checks. (All analyses were also conducted with all 240 participants. Results were identical to those analyses performed with only those participants who passed the manipulation check with one minor exception which is discussed at the relevant section in the Results.). Mean confidence is displayed in Table 5.

Effect of Cowitness Identification Decision on Participant Confidence

Our first analyses examine only those witnesses who were not given any information about the confidence of the cowitness. Participants who overheard the cowitness make the same identification as them were significantly more confident in their identification (M = 6.8) than control participants who did not overhear any identification made by the cowitness (M = 5.5), t(57) = 2.22, p = .03, d = .59. However, participants who overheard the cowitness make a different identification were not significantly

Table 5

Mean Confidence Scores (SDs in Parentheses) of Witnesses as a Function of the Cowitness's Identification and the Cowitness's Confidence

	Cowitness confidence						
Cowitness identification	High	Low	Unknown				
Same as participant's	6.8(2.2) (n = 30)	5.6(2.2) (n = 24)	6.8(2.0) (n = 31)				
Different from participant's	5.7(2.6) (n = 28)	6.0(2.5) (n = 23)	(n = 31) 5.5 (3.6) (n = 28)				
Control			5.5 (2.5) (n = 28)				

less confident in their identification (M = 5.5) than control participants, t(54) = .00, p = 1.0, d = .00.

A composite index was created by averaging participants' responses to the remaining testimony-relevant measures (with appropriate measures reverse scored so that higher scores represented better reports of the witnessing experience and an easier lineup task). Examining this composite index produced a similar pattern to confidence. Participants who overheard the cowitness make the same identification as them reported a stronger witnessing experience (M = 6.1) than control participants (M = 5.4), t(57) = 2.12, p = .04, d = .56. Participants who overheard the cowitness make a different identification from them (M = 5.0), however, did not report a significantly weaker witnessing experience, t(54) = 1.32, p = .19, d = .36.

Cowitness Confidence as a Moderator of the Cowitness Effect

These analyses examined whether the confidence with which the cowitness made his or her identification affected participants' confidence. When the cowitness identified a different person than the witness, neither indications of high confidence nor indications of low confidence affected witnesses' confidence (Ms = 5.7 and 6.0, respectively), t(54) = .22, p = .83, d = .06, and t(49) = .52, p = .61, d = .15, respectively. The composite index of the other testimony-relevant judgments was also not moderated by either high cowitness confidence (M = 5.3), t(54) = 1.12, p = .27, d =.30, or low cowitness confidence (M = 5.5), t(49) = 1.48, p = .15, d = .42.

However, when the cowitness identified the same person as the witness, indications that the cowitness was not confident in his or her identification reduced witnesses' confidence in their identification (M = 5.6), t(53) = 2.06, p = .05, d = .57. (When all 240 participants are included in the analysis, this difference is marginally significant, t(67) = 1.90, p = .06, d = .46.) In fact, these low-confidence indications completely eliminated the confidenceinflating effect of the cowitness, resulting in confidence scores that were not significantly different from those of control witnesses, t(50) = .19, p = .86, d = .05. Indications that the cowitness was highly confident in his or her identification had no significant effect on witness's confidence (M = 6.8), t(58) = .04, p = .97,d = .01. The composite index of the other testimony-relevant judgments was not moderated by either high cowitness confidence (M = 6.4), t(59) = .97, p = .34, d = .25, or low cowitnessconfidence (M = 5.6), t(53) = 1.50, p = .14, d = .41.

Overall, the selective cue integration framework predicts that there are only two conditions in which participants' confidence should be inflated above control: The same ID/unknown confidence condition and the same ID/high confidence condition. Confidence should not differ between these two conditions. Consistent with this prediction, a linear contrast comparing those two cells to the remaining five cells was indeed significant, t(184) = 2.92, p =.004, d = .43. The same contrast was also significant for the composite index of the other testimony-relevant variables, t(185) = 4.60, p < .001, d = .68.

Discussion

To provide a strong test of the selective cue integration framework, witnesses were exposed to cowitness information following a lineup identification. The selective cue integration framework made five predictions regarding how that cowitness information would affect witnesses' confidence. Results conformed to each of those predictions: Hearing a cowitness who made the same identification as the participant significantly inflated confidence (Hypothesis 1), but hearing a cowitness who made a different identification as the participant had no significant effect on confidence (Hypothesis 2). When the cowitness made a different identification than the participant, the confidence of the cowitness had no significant impact on witnesses' confidence (Hypothesis 3). However, when the cowitness made the same identification as the participant, indicators of low cowitness confidence eliminated the confidence-inflating effect of the cowitness information (Hypothesis 4), whereas indicators of high cowitness confidence did not significantly further increase the confidence-inflating effect of the cowitness information (Hypothesis 5).

The results of study 2 dovetail nicely with prior results from studies that have examined the postidentification feedback effect that, like study 2, have typically found a confidence-inflating effect of confirming feedback without a commensurate confidence-deflating effect of disconfirming feedback (see Douglass & Steblay, 2006, for a meta-analysis). Also like study 2, studies have found that manipulations that undermine the credibility of the feedback eliminate the confidence-inflating effect of the feedback (Lampinen et al., 2007; Neuschatz et al., 2007).

The parallel effects observed between the cowitness feedback paradigm of study 2 and previous administrator feedback studies suggest that they are not independent phenomena, but are rather both reflections of the same underlying cognitive principles. This convergence is especially compelling given that the specific manipulations used within each paradigm were quite different. To manipulate external cues, administrator feedback studies typically use statements provided by the experimenter as to the accuracy of the witness (e.g., Wells & Bradfield, 1998); study 2 used an identification made by a cowitness. To manipulate the credibility of the feedback, administrator feedback studies have used statements meant to call the motives of the feedback-provider into question (e.g., Neuschatz et al., 2007); study 2 used the confidence of a cowitness. This suggests that the cognitive processes involved in confidence assessment transcend the specific paradigm in which the phenomenon is examined and the specific manipulations used within those paradigms.

Specifically, the results of study 2 as well as all of the postidentification feedback results are consistent with the selective cue integration framework: When asked to assess their confidence, witnesses lacking strong internal cues to their accuracy selectively search for external cues that can be used to justify their identification, as opposed to external cues that would call that identification into question. Those justifying cues are then submitted to a credibility check; if information is found that undermines the credibility of the cue it fails to be integrated into one's confidence, otherwise it becomes integrated.

General Discussion

To date, a well-developed, cohesive theory explaining how witnesses form their confidence assessments has been conspicuously absent from the eyewitness psychology literature. The current paper proposed a new framework of how witnesses form confidence assessments-the selective cue integration framework-that is able to account for all the past data, and that begins to sketch out such a theory. The framework made novel predictions that were all supported across multiple studies. Specifically, it successfully predicted that the same manipulation (i.e., a disconfirming statement) could have different effects on a witness's confidence depending on when it is administered to the witness (study 1a), providing evidence that witnesses selectively search for cues to integrate into their confidence assessment, and that they then submit those cues to a credibility check before integrating them. It successfully predicted that the mechanism by which certain statements are able to eliminate the confidence-inflating effects of feedback is via an undermining of the credibility of the feedback, and not through an indication that the witness's identification was incorrect (study 1b). Most importantly, it was able to predict the exact pattern of results of witness confidence reports observed within a completely novel paradigm examining a topic (postidentification cowitness influence) dissociated from the data that led to the formulation of the framework (study 2).

Can the Cues Hypothesis Explain the Observed Results?

Recall that the selective cue integration framework is an extension and refinement of the cues hypothesis. The principle of parsimony dictates that the selective cue integration framework's postulation of additional cognitive processes should only be made if observed findings cannot be explained within the cues hypothesis's simpler framework. For instance, although the cues hypothesis lacks a specified mechanism by which undermining feedback (e.g., recanting feedback) eliminates the effects of confirming feedback, perhaps it is possible to reconcile some of our findings with the cues hypothesis using the following logic: Instead of thinking of recanted feedback as the undermining of a cue (as the selective cue integration framework does), perhaps the recantation is treated as another accuracy cue itself. The confidence-inflating effects of the confirming feedback cue are then counteracted by the confidence-deflating effects of the recantation cue, explaining some of the observed results within a cues hypothesis framework.

This explanation, however, suffers from at least three problems. First, if the recantation statement acts as an accuracy cue itself, then witnesses who received disconfirming feedback, which was the same statement, should also have used it as a cue and consequently should have lowered their confidence. As study 1a demonstrated, however, this did not happen. The confidence-deflating effect of a disconfirming statement seems to be dependent upon the prior administration of confirming feedback, an interpretation consistent with the idea that recantation undermines confirming feedback, but inconsistent with the idea that recantation is a cue itself.

Second, if witnesses were using a recantation statement as an accuracy cue, they should only use a recantation statement that provides them information about the accuracy of their identification (e.g., "You were wrong"), not one that provides them no information about the accuracy of their identification (e.g., "I do not know if you were right or wrong"), because the latter is an empty statement that provides no clues as to how confidence should be adjusted. The results of study 1b, however, show that feedback-produced confidence inflation was nonetheless elimi-

nated by this latter recantation statement. These results are again consistent with the interpretation that recanted feedback operates by undermining previously administered confirming feedback, but not with the interpretation that recanted feedback serves as a cue itself.

Third, even if conceptualizing recanted feedback as a cue could explain the results from studies 1a and 1b, it is difficult to see how low cowitness confidence could be conceptualized as an accuracy cue in study 2. The confidence expressed by a cowitness has no bearing on the accuracy of the participant, except insofar as it moderates how the participant views the cowitness's identification. Therefore, it only makes sense to think of the cowitness's confidence as a factor that leads participants to adjust their perceptions of a cue to their accuracy (i.e., the cowitness's identification), not as a cue itself. In other words, low cowitness confidence acts as information that undermines the credibility of the cowitness's identification.

Implications of the Selective Cue Integration Framework

The majority of data on how external influences affect witnesses' confidence assessments derive from the postidentification feedback literature. Apart from the main finding that confirming feedback can inflate confidence, there have been a number of other secondary findings observed in this literature. The selective cue integration framework provides a framework to explain them all, including: (a) the asymmetric effects of confirming versus disconfirming feedback (Douglass & Steblay, 2006); (b) the prophylactic effect of prior thought on the feedback effect (Wells & Bradfield, 1999); (c) the greater effect of feedback on inaccurate versus accurate witnesses (Bradfield et al., 2002); (d) the finding that recantation eliminates the feedback effect (current studies 1a and 1b); (e) the finding that recantation effects occur regardless of whether the recantation is given by a third party (Neuschatz et al., 2007) or the feedback-administrator themselves (current studies 1a and 1b); (f) the finding that recantation eliminates confidence inflation regardless of whether the identification itself is discredited (current study 1b); (g) the finding that instructions to ignore feedback that do not undermine the credibility of the confirming cue itself fail to eliminate the feedback effect (Lampinen et al., 2007, studies 3 and 4); and (h) the finding that postidentification feedback effects occur when the source of the feedback has high credibility, but not when the source of feedback has low credibility (Skagerberg & Wright, 2009). The selective cue integration framework is currently the only theoretical explanation for the feedback effect that can explain all of these findings.

In addition, the selective cue integration framework unites postidentification feedback phenomena and cowitness feedback phenomena under a common theoretical umbrella, and the results of study 2 provide empirical support for this unification. This nexus had previously been impossible because of a lack of theoretical specification of the cognitive processes underlying these two phenomena. The selective cue integration framework suggests that these phenomena are simply two demonstrations of similar underlying cognitive principles.

One important implication of the selective cue integration framework is that external confidence cues do not irrevocably taint a witness's confidence assessment, as it is not until asked to generate a confidence report that feedback becomes integrated into one's confidence. Methods aimed at eliminating the feedback effect by undermining the credibility of the feedback should be useful if implemented before this point. Thus, instilling suspicion of motives of the feedback-provider (Neuschatz et al., 2007; Quinlivan et al., in press), dismissing the utility of the previously administered feedback (Lampinen et al., 2007, studies 1 and 2), or recanting one's own feedback (current studies 1a and 1b) all succeed in eliminating the feedback effect. Because the integration of cues does not occur until the witness is asked to provide a confidence statement, these techniques do not eliminate the feedback effect so much as they ensure that it never occurs in the first place.

Consequently, from an applied perspective, recanting feedback may be a useful strategy to eliminate the feedback effect, provided it undermines the credibility of the feedback. This is an important point, as it suggests that a simple warning about the confidenceinflating effects of feedback, or an instruction to simply ignore the previously administered feedback (cf. Lampinen et al., 2007, studies 3 and 4), should fail to eliminate the feedback effect. Undermining the feedback, however, may prove to be a particularly effective strategy for eliminating the feedback effect for a number of reasons. First, it does not seem to matter, either theoretically or empirically, who administers the recantation, whether it is a third party (Neuschatz et al., 2007; Quinlivan et al., in press), or the feedback-administrators themselves (current studies). This flexibility makes recantation a particularly attractive option to mitigate the effects of feedback.

Second, recantation is not as time-dependent as other methods of avoiding the feedback effect (e.g., eliciting a confidence statement immediately after the identification), which must be implemented before the confirming feedback. In contrast, undermining the feedback—whether by instilling suspicion as to the feedback-provider's motives or recanting the feedback—should effectively eliminate the feedback effect as long as it is administered at some point before the confidence assessment. Indeed, undermining the motives of a feedback-administrator is equally effective in eliminating the feedback effect whether the undermining information is given immediately after feedback or 1 week after feedback (Neuschatz et al., 2007). Theoretically, the legal system has a large window of opportunity in which to use this strategy to minimize the influence of feedback.

Future Directions for the Selective Cue Integration Framework

Although the current data provide initial support for the selective cue integration framework, we fully recognize that further research is needed to refine some aspects of this theoretical account. For example, the relative automaticity/deliberativeness of the various stages in the selective cue integration framework is unknown. It is tempting to assume that the assessment, search, credibility evaluation, and selective integration processes are effortful and deliberative, but this has not been established. People routinely make confidence judgments; to the extent that they are also formed via similar active cognitive processes, it is possible that these processes would be so well ingrained as to be performed automatically. This is important because to the extent that these judgments are deliberative in nature, it is possible to interfere with them. For example, making witnesses cognitively busy while generating a confidence report will have different effects depending on the deliberativeness of the individual processes. Such a manipulation could eliminate the feedback effect (if the search for external cues is a deliberative process), or it could exacerbate the feedback effect by leading witnesses to ignore feedbackdiscrediting information (if the search for external cues is an automatic process, but the credibility evaluation is a deliberative process).

Predictions of the selective cue integration framework were largely formulated by thinking about the postidentification feedback effect as analogous to an attitude change phenomenon. As such, other attitude change phenomena may lead to further predictions concerning feedback. For example, research into the sleeper effect has demonstrated that over time, information from a low credibility source becomes more persuasive (Kumkale & Albarracin, 2004). This is usually explained by postulating that over time the discounting information either becomes dissociated from, or is forgotten more quickly than, the message itself, and thus increasingly fails to undermine the persuasiveness of the message. Analogously, information that undermines the credibility of feedback may be forgotten more quickly than the feedback itself, leading to a return of confidence inflation over time. If the postidentification feedback effect is an attitude change phenomenon, then the effectiveness of credibility-undermining information on eliminating the feedback effect should be dependent on the timing of that information in relation to the confidence assessment process, an as-yet untested prediction.

Although thinking of postidentification feedback as an attitude change phenomenon is consistent with prior theory and research (e.g., Blanton et al., 2001; Wells & Bradfield, 1999), direct tests of these mechanisms would further support the framework and would be beneficial, as this logic could lead to further ways to eliminate the feedback effect. For example, if one could reduce the motivational propensity of witnesses to justify their previous actions (e.g., perhaps by emphasizing to witnesses that uncertainty is normal), then one should in turn reduce the likelihood of a biased confidence assessment. Furthermore, it would suggest that the inability of disconfirming feedback to deflate confidence that has been observed across numerous studies may have been a byproduct of this motivational drive; it might be possible to observe such confidence-deflating effects under specific conditions where this motivation is minimized. This could occur, for example, when witnesses are not very committed to their identification, because less behavioral commitment produces weaker dissonance concerns (Beauvois, Joule, & Brunetti, 1993; Brehm & Cohen, 1962; Wicklund & Brehm, 1976).

In fact, a motivational underpinning to feedback effects is consistent with the notion that as the strength of internal cues increases, the reliance on external cues decreases (Bradfield et al., 2002). Although this trade-off is usually explained in more cognitive terms—that strong internal cues obviate the need to rely on external cues (or, as we argued previously, a highly accessible attitude mitigates the effect of a subsequent persuasive message) —a more motivational account is possible. Specifically, witnesses who have particularly strong internal accuracy cues may deliberatively choose to forgo looking for external cues because doing so has few benefits and many costs: Finding a confirming cue cannot reduce dissonance by inflating confidence (because confidence is already at ceiling), but finding a disconfirming cue could increase dissonance.

Certainly other questions concerning the selective cue integration framework remain. But those raised here make a point: An improved theoretical understanding of witnesses' cognitive processes is an important tool for driving *practical* recommendations. Given the applied nature of eyewitness psychology, there is often a natural proclivity to do the reverse-to first find the practical implications of a phenomenon, or to attempt to discover applied solutions to a problematic phenomenon, before a proper understanding of the phenomenon itself, and to only use theory as a post hoc explanatory tool. A perusal of the past 10 years of research generally shows this trend to have occurred with respect to the postidentification feedback effect, with only a few exceptions. But instead of discussing theory only as an afterthought, it should be brought closer to the forefront of our studies, using it to guide our search for practical procedural improvements; to do otherwise is to risk blinding ourselves to potential progress. For example, the theoretically unsupported assumption that a witness is contaminated immediately upon receiving postidentification feedback may lead researchers to dismiss out of hand any attempts to extract an unblemished confidence report from that witness after being exposed to feedback. However, if witnesses are not contaminated until they assess their confidence, as suggested by the selective cue integration framework, then such dismissals are not only premature, but counterproductive, as they will lead researchers away from potentially fruitful and innovative discoveries. It is time for practical solutions to feedback-produced confidence inflation to be driven by an improved theoretical understanding of the cognitive processes that underlie it.

References

- Bassili, J. N. (1996). Meta-judgmental versus operative indexes of psychological attributes: The case of measures of attitude strength. *Journal of Personality and Social Psychology*, 71, 637–653.
- Beauvois, J. L., Joule, R. V., & Brunetti, F. (1993). Cognitive rationalization and act rationalization in an escalation of commitment. *Basic and Applied Social Psychology*, 14, 1–17.
- Blanton, H., Pelham, B. W., DeHart, T., & Carvallo, M. (2001). Overconfidence as dissonance reduction. *Journal of Experimental Social Psychology*, 37, 373–385.
- Bradfield, A. L., Wells, G. L., & Olson, E. A. (2002). The damaging effect of confirming feedback on the relation between eyewitness certainty and identification accuracy. *Journal of Applied Psychology*, 87, 112–120.
- Brehm, J. W., & Cohen, A. R. (1962). Explorations in cognitive dissonance. New York: Wiley.
- Brewer, N., & Burke, A. (2002). Effects of testimonial inconsistencies and eyewitness confidence on mock-juror judgments. *Law & Human Behavior*, 26, 353–364.
- Brewer, N., Keast, A., & Rishworth, A. (2002). The confidence-accuracy relationship in eyewitness identification: The effects of reflection and disconfirmation on correlation and calibration. *Journal of Experimental Psychology: Applied, 8,* 44–56.
- Brewer, N., Weber, N., & Semmler, C. (2007). A role for theory in eyewitness identification research. In R. C. L. Lindsay, D. F. Ross, J. D. Read, & M. P. Toglia (Eds.), *The handbook of eyewitness psychology: Memory for people* (pp. 201–218). Mahwah, NJ: Erlbaum.
- Brewer, N., & Wells, G. (2006). The confidence-accuracy relation in eyewitness identification: Effects of lineup instructions, foil similarity, and targetabsent base rates. *Journal of Experimental Psychology: Applied*, 12, 11–30.
- Chaiken, S., Pomerantz, E. M., & Giner-Sorolla, R. (1995). Structural consistency and attitude strength. In R. E. Petty & J. A. Krosnick (Eds.), Attitude

strength: Antecedents and consequences (pp. 93-130). Mahwah, NJ: Erlbaum.

- Cooper, J., & Fazio, R. H. (1989). Research traditions, analysis, and synthesis: Building a faulty case around misinterpreted theory. *Personality and Social Psychology Bulletin*, 15, 519–529.
- Cutler, B., & Penrod, S. (1989). Forensically relevant moderators of the relation between eyewitness identification accuracy and confidence. *Journal of Applied Psychology*, 74, 650–652.
- Cutler, B., Penrod, S., & Dexter, H. (1990). Juror sensitivity to eyewitness identification evidence. *Law and Human Behavior*, 14, 185–191.
- Cutler, B., Penrod, S., & Stuve, T. (1988). Juror decision making in eyewitness identification cases. *Law and Human Behavior*, 12, 41–55.
- Ditto, P. H., & Lopez, D. F. (1992). Motivated skepticism: Use of differential decision criteria for preferred and nonpreferred conclusions. *Journal of Personality and Social Psychology*, 63, 568–584.
- Douglass, A. B., & Steblay, N. (2006). Memory distortion in eyewitnesses: A meta-analysis of the post-identification feedback effect. *Applied Cognitive Psychology*, 20, 859–869.
- Eagly, A. H., & Chaiken, S. (1995). Attitude strength, attitude structure, and resistance to change. In R. E. Petty & J. A. Krosnick (Eds.), *Attitude strength: Antecedents and consequences* (pp. 93–130). Mahwah, NJ: Erlbaum.
- Edwards, K., & Smith, E. E. (1996). A disconfirmation bias in the evaluation of arguments. *Journal of Personality and Social Psychology*, 71, 5–24.
- Fazio, R. H. (1995). Attitudes as object-evaluation associations: Determinants, consequences, and correlates of attitude accessibility. In R. E. Petty & J. A. Krosnick (Eds.), *Attitude strength: Antecedents and consequences* (pp. 93–130). Mahwah, NJ: Erlbaum.
- Festinger, L., & Carlsmith, J. M. (1959). Cognitive consequences of forced compliance. *Journal of Abnormal and Social Psychology*, 58, 203–210.
- Grice, H. P. (1975). Logic and conversation. In P. Cole & J. L. Morgan (Eds.), Syntax and semantics, Vol. 3: Speech acts (pp. 225–242). New York: Academic Press.
- Hovland, C. I., Lumsdaine, A. A., & Sheffield, F. D. (1949). Experiments on mass communication. Princeton, NJ: Princeton University Press.
- Koriat, A., Lichtenstin, S., & Fischhoff, B. (1980). Reasons for confidence. Journal of Experimental Psychology: Human Learning and Memory, 6, 107–118.
- Kumkale, G. T., & Albarracin, D. (2004). The sleeper effect in persuasion: A meta-analytic review. *Psychological Bulletin*, 130, 143–172.
- Kunda, Z. (1990). The case for motivated reasoning. *Psychological Bulletin*, 108, 480–498.
- Lampinen, J. M., Scott, J., Pratt, D., Leding, J. K., & Arnal, J. D. (2007). "Good, you identified the suspect.. But please ignore this feedback": Can warnings eliminate the effects of post-identification feedback? *Applied Cognitive Psychology*, 21, 1037–1056.
- Leippe, M. R., & Eisenstadt, D. (2007). Eyewitness confidence and the confidence-accuracy relationship in memory for people. In R. C. L. Lindsay, D. F. Ross, J. D. Read, & M. P. Toglia (Eds.), *The handbook of eyewitness psychology: Memory for people* (pp. 377–425). Mahwah, NJ: Erlbaum.
- Lindsay, R. C. L., Wells, G. L., & O'Connor, F. (1989). Mock juror belief of accurate and inaccurate eyewitnesses: A replication. *Law and Human Behavior*, 13, 333–340.
- Lord, C. G., Ross, L., & Lepper, M. R. (1979). Biased assimilation and attitude polarization: The effects of prior theories on subsequently considered evidence. *Journal of Personality and Social Psychology*, 37, 2098–2109.
- Luus, C. A. E., & Wells, G. L. (1994). The malleability of eyewitness confidence: Co-witness and perseverance effects. *Journal of Applied Psychology*, 79, 714–724.
- Neil v. Biggers, 409 US 188 (1972).
- Neuschatz, J. S., Lawson, D. S., Fairless, A. H., Powers, R. A., Neuschatz, J. S., Goodsell, C. A., & Toglia, M. P. (2007). The mitigating effects of

suspicion on post-identification feedback and on retrospective eyewitness memory. *Law and Human Behavior*, *31*, 231–247.

- Neuschatz, J. S., Preston, E. L., Burkett, A. D., Toglia, M. P., Lampinen, J. M., Neuschatz, J. S., ... Goodsell, C. A. (2005). The effects of postidentification feedback and age on retrospective eyewitness memory. *Applied Cognitive Psychology*, 19, 435–453.
- Nickerson, R. S. (1998). Confirmation bias: A ubiquitous phenomenon in many guises. *Review of General Psychology*, 2I, 175–220.
- Pallak, M. S., & Cummings, W. (1976). Commitment and voluntary energy conservation. *Personality and Social Psychology Bulletin*, 2, 27–30.
- Petrocelli, J. V., Tormala, Z. L., & Rucker, D. D. (2007). Unpacking attitude certainty: Attitude clarity and attitude correctness. *Journal of Personality* and Social Psychology, 92, 30–41.
- Petty, R. E., Cacioppo, J. T., & Goldman, R. (1981). Personal involvement as a determinant of argument-based persuasion. *Journal of Personality and Social Psychology*, 41, 847–855.
- Petty, R. E., Haugtvedt, C. P., & Smith, S. M. (1995). Elaboration as a determininant of attitude strength: Creating attitudes that are persistent, resistant, and predictive of behavior. In R. E. Petty & J. A. Krosnick (Eds.), *Attitude strength: Antecedents and consequences* (pp. 93–130). Mahwah, NJ: Erlbaum.
- Petty, R. E., & Wegener, D. T. (1998). Attitude change: Multiple roles for persuasion variables. In D. Gilbert, S. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology* (4th ed., pp. 323–390). New York: McGraw-Hill.
- Quinlivan, D. S., Wells, G. L., & Neuschatz, J. (in press). Is manipulative intent necessary to mitigate the eyewitness post-identification feedback effect? *Law and Human Behavior*.
- Schwartz, N. (2007). Attitude construction: Evaluation in context. Social Cognition, 25, 638–656.
- Schwartz, N., & Clore, G. L. (1983). Mood, misattribution, and judgment of well-being: Informative and directive functions of affective states. *Journal* of Personality and Social Psychology, 45, 513–523.
- Schwarz, N., & Bohner, G. (2001). The construction of attitudes. In A. Tesser & N. Schwarz (Eds.), *Blackwell handbook of social psychology: Intraindividual processes* (pp. 436–457). Malden, MA: Blackwell Publishers.
- Semmler, C., Brewer, N., & Wells, G. L. (2004). Effects of postidentification feedback on eyewitness identification and nonidentification. *Journal of Applied Psychology*, 89, 334–346.
- Shaw, J. S., III, & McClure, K. A. (1996). Repeated postevent questioning can lead to elevated levels of eyewitness confidence. *Law and Human Behavior*, 20, 629–653.
- Shaw, J. S., III. (1996). Increases in eyewitness confidence resulting from

postevent questioning. Journal of Experimental Psychology: Applied, 2, 126–146.

- Skagerberg, E. M. (2007). Co-witness feedback in line-ups. Applied Cognitive Psychology, 21, 489–497.
- Skagerberg, E. M., & Wright, D. B. (2009). Susceptibility to postidentification feedback is affected by source credibility. *Applied Cognitive Psychology*, 23, 506–523.
- Sporer, S. L., Penrod, S., Read, D., & Cutler, B. (1995). Choosing, confidence, and accuracy: A meta-analysis of the confidence-accuracy relation in eyewitness identification studies. *Psychological Bulletin*, 118, 315–327.
- Stone, J., Aronson, E., Crain, A. L., Winslow, M. P., & Fried, C. B. (1994). Inducing hypocrisy as a means of encouraging young adults to use condoms. *Personality and Social Psychology Bulletin*, 20, 116–128.
- Valins, S. (1966). Cognitive effects of false heart-rate feedback. Journal of Personality and Social Psychology, 4, 400–408.
- Wells, G. L., & Bradfield, A. L. (1998). "Good, you identified the suspect": Feedback to eyewitnesses distorts their reports of the witnessing experience. *Journal of Applied Psychology*, 83, 360–376.
- Wells, G. L., & Bradfield, A. L. (1999). Distortions in eyewitnesses' recollections: Can the postidentification-feedback effect be moderated? *Psychological Science*, 10, 138–144.
- Wells, G. L., Ferguson, T. J., & Lindsay, R. C. L. (1981). The tractability of eyewitness confidence and its implication for triers of fact. *Journal of Applied Psychology*, 66, 688–696.
- Wells, G. L., Lindsay, R. C. L., & Ferguson, T. J. (1979). Accuracy, confidence, and juror perceptions in eyewitness identification. *Journal of Applied Psychology*, 64, 440–448.
- Wells, G. L., & Murray, D. M. (1984). Eyewitness confidence. In G. L. Wells & E. L. Loftus (Eds.), *Eyewitness testimony: Psychological perspectives* (pp. 155–170). New York: Cambridge University Press.
- Wells, G. L., Olson, E. A., & Charman, S. D. (2003). Distorted retrospective eyewitness reports as functions of feedback and delay. *Journal of Experimental Psychology: Applied*, 9, 42–52.
- Wells., G. L., & Petty, R. E. (1980). The effects of overt head movements on persuasion: Compatibility and incompatibility of responses. *Basic and Applied Social Psychology*, 1, 219–230.
- Whitley, B. E., Jr., & Greenberg, M. S. (1986). The role of eyewitness confidence in juror perceptions of credibility. *Journal of Applied Social Psychology*, 16, 387–409.
- Wicklund, R. A., & Brehm, J. W. (1976). Perspectives on cognitive dissonance. Hillsdale, NJ: Erlbaum.

Received October 16, 2009

Revision received January 19, 2010

Accepted March 3, 2010