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The Malleability of Eyewitness Confidence in Children and Adults

by

C. A. Elizabeth Luus

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled The Malleability of Eyewitness Confidence in Children and Adults submitted by C. A. Elizabeth Luus in partial fulfilment of the requirements for the degree of Master of Arts.

Gary L. Wells
Supervisor

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Date August 19, 1988

Abstract

Eyewitnesses (n = 286) to a simulated crime film depicting a grocery store robbery attempted to identify the thief from a photo lineup. The eyewitnesses were sampled from three age groups: 6-years old, 12-years old, and adults. In an attempt to manipulate eyewitness confidence after the identification, witnesses received either positive feedback (suggesting that they had identified a suspect in the case), negative feedback (suggesting that the person they identified was *not* a suspect in the case) or no feedback. Eyewitnesses who received positive or neutral feedback rated themselves as more confident that they had identified the thief than did witnesses who had received negative feedback. Eyewitnesses who made an identification subsequently responded to cross-examination questioning about their memory for the crime. All cross-examintions were videotaped. The 6-year olds provided cross-examination testimony that was significantly less accurate than testimony provided by the 12-year olds or adults. Furthermore, the 6-year olds were significantly less accurate in responding to leading as opposed to non-leading questions whereas the 12-year olds were equally accurate with the leading and non-leading questions and the adults were more accurate with the leading than with the non-leading questions. In Phase 2 of this research, subject-jurors (n = 286) viewed the videotaped examinations and evaluated the credibility of the witnesses. Eyewitness age was related to perceived eyewitness

credibility, with the 6-year olds rated as less accurate under cross-examination than the 12-year olds or adults, and the 6- and 12-year olds perceived as less confident and believable than the adults. For witnesses of every age, subject-jurors' ratings of perceived identification accuracy and believability were influenced by the type of feedback (positive, negative, or no feedback) witnesses had received. Positive identification feedback did not enhance believability or perceived identification accuracy relative to no feedback but negative feedback did lower these credibility ratings relative to no feedback.

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I. Introduction

Eyewitness identification testimony is an impactful form of evidence in a criminal trial, second in persuasive impact perhaps only to confessions of guilt. Persuasive impact is especially great if the witness is perceived to be confident about the identification (Wells & Murray, 1984). Indeed, the United States judiciary recognizes confidence as a key factor to be considered in deciding the accuracy of eyewitness testimony (Neil v. Biggers, 1972). Furthermore, empirical research indicates that jurors tend to rely heavily on eyewitness confidence to infer testimony accuracy (e.g., Wells, Lindsay, & Ferguson, 1979; Lindsay, Wells, & Rumpel, 1981). For example, Wells, Lindsay, and Ferguson found that subject-jurors' ascriptions of eyewitness confidence accounted for 50% of the variance in subject-jurors' assessments of eyewitness accuracy.

Despite jurors' trust of eyewitness confidence as a valid sign of testimony credibility, it has proven, at best, to be a tenuous predictor of testimony accuracy (e.g. Deffenbacher, 1980; Leippe, 1980; Wells & Murray, 1983, 1984). So, whether an eyewitness misidentifies or correctly identifies the suspect from a lineup has little relation to the witness' expressed confidence in the identification decision. This phenomenon might be largely responsible for the poor performance of subject-jurors in judging the accuracy of eyewitness identifications. For example, Wells et al. (1979) videotaped the cross-examinations of

eyewitnesses to staged thefts and subsequently presented the videotapes to subject-jurors, asking them to judge whether they believed the witness had correctly identified the criminal or not. Subject-jurors relied heavily on eyewitness confidence to make their decisions, and equally believed eyewitnesses who had correctly identified the criminal and witnesses who had mistakenly identified an innocent suspect.

Recent research by Wells, Turtle, and Luus (in press) extended the study of eyewitness confidence to 8-year old children. This research demonstrated that these children's eyewitness testimony was as impactful as that of adults. Indeed, with children, just as with adults, eyewitness confidence, although undiagnostic of testimony accuracy, was a robust determinant of jurors' judgments of eyewitness credibility. Although the children provided cross-examination testimony that was signficantly less accurate than testimony provided by 12-year olds or adults, subject-jurors seemed insensitive to the reduced accuracy of the children's testimony. For both adult and child eyewitnesses, subject-jurors tended to believe eyewitnesses who were perceived as confident. In fact, highly confident children were perceived as more credible eyewitnesses than was the average adult.

Why are eyewitness accuracy and confidence not positively related? Leippe (1980) proposed that the human information-processing system seems "capable of altering memory and confidence in orthogonal directions, especially

in the context of powerful and rich social situations" (p. 271). Leippe suggested that eyewitness accuracy and confidence could be independently controlled by different mechanisms.

For example, in judging the likelihood that their memories are accurate, witnesses presumably use a heuristic in which the vividness of their recollections serves as a cue to the accuracy of the underlying memories. A vivid recollection probably serves as a signal to the witness of an accurate memory. However, to the extent that witnesses are unaware of encoding or witnessing conditions that can cause memory inaccuracies, such as short target exposure time (Loftus, 1972) and low perceived crime seriousness (Leippe, Wells, & Ostrom, 1978), they might vividly recall a distorted or inaccurately encoded memory. Alternatively, social influences, such as discussion with other people present at the scene of a crime might "corrobarate" a witness' memory and, thus, enhance the strength of the witness' belief in the accuracy of his or her recollection of what happened, rather than influence the vividness of the recollection. There has been little research on the malleability of eyewitness confidence, but considerable research on the malleability of eyewitness memory, which is reviewed in the next section. Research and theory on the malleability of memory is especially relevant to the idea that confidence is malleable for two main reasons. First, memory malleability research rests on a proposition that is

similar to the one that is being tested in the current research on confidence malleability; namely, that other people can serve as external sources of information and can influence one's testimony about a previously-witnessed event. Parallelism between memory malleability is also apparent in the mutual interest in the hypothesis that children are more malleable than adults.

A. The Malleability of Eyewitness Memory

Loftus (1974) suggested that eyewitness accuracy might decrease as a function of post-witnessed-event cognitive processing. That is, subsequent to witnessing a crime, eyewitnesses might integrate their memory for the event with previously stored memories, or might modify or distort their recollection of what happened by combining that memory with information gained through discussion with others present at the scene of the crime.

Research concerning the effects of misleading questions on eyewitness accuracy supports this memory distortion hypothesis. More specifically, the findings of this research indicate that providing witnesses with misleading postevent information, that is information that is inconsistent with some aspect of a witnessed event, can reduce the accuracy of eyewitness reports. Indeed, in a number of studies (e.g., Loftus & Palmer, 1974; Loftus, 1975, 1977; Loftus, Miller, & Burns, 1978) participants who were provided with misleading postevent information tended to incorporate the information

into their reports when later questioned about the event. For example, Loftus (1975) had participants watch a slide sequence depicting a traffic accident and then respond to questions about the event. One half of the participants were asked, "How fast was the white sports car going when it passed the barn while travelling along the country road?". This question was misleading in that the car did not pass a barn. Control condition participants were simply asked to estimate the speed of the car travelling down the country road. Only 2.7% of the control participants responded affirmatively when asked if they had seen a barn. However, 17.3% of participants who received the misleading postevent information reported seeing a barn. Loftus interpreted these results as evidence that the misleading information impaired participants' memory for the event.

Studies that have examined developmental differences in vulnerability to misleading information (e.g., Cohen & Harnick, 1980; Ceci, Ross, & Toglia, 1987), using a similar paradigm to that outlined above, suggest that young children's memories may be more malleable than those of older individuals. For example, Ceci et al. (1987) employed a forced-choice recognition test to assess age trends in suggestibility for recollection of stories. Children ranging in age from 3 to 12 years were read a story by an adult experimenter. The story was accompanied by eight illustrations. One day after presentation of the story, participants received either biased or unbiased information

about the content of the story. In the biased information condition; participants were asked whether they remembered the story about a little girl, Loren, who had a headache because she ate her cereal too fast. The story was, in fact, about a girl named Loren who had a *stomachache* from eating her *eggs* too fast. In the unbiased condition, participants were simply asked whether they remembered the story about Loren who was sick.

Two days after the presentation of the postevent information the children were given a forced-choice recognition test. The children were presented with four pictures and were instructed to select the two that had accompanied the story. Two of the pictures correctly depicted: (1) Loren eating her eggs, and (2) Loren with a stomachache. The other pictures included information that had only been suggested to participants who received the biased information. One picture depicted Loren eating cereal and the other depicted Loren with a headache. The results of this study suggested that preschoolers (ages 3 - 4) are more vulnerable to suggestibility effects due to misleading postevent information than are older children.

The interpretation that misleading information impairs participants' memory for an event has recently been challenged by a number of researchers who argue that misleading postevent information may impair both adults' and children's eyewitness *reports* but leave intact the eyewitness's *memories* (e.g., Bekerian & Bowers, 1983; Ceci,

Ross, & Toglia, 1987; McCloskey & Zaragoza, 1985a, 1985b; Zaragoza, Janis, & McCloskey, 1987; Smith & Ellsworth, 1987). For example, Bekerian and Bowers (1983) used a procedure similar to that used by Loftus, wherein adult participants viewed a series of slides depicting an auto-pedestrian accident, were subsequently provided with postevent information that was either consistent or inconsistent with some aspect of the original slide sequence, and finally responded to a two-alternative forced-choice recognition test. Participants viewed pairs of slides consisting of one slide from the original series and another that depicted the misleading information presented in the inconsistent condition. Participants were asked to decide which slide had been presented before. The test slides were presented either in random order (the usual procedure of Loftus' studies) or in an order that matched the original presentation sequence. Only in the random test-order condition did participants incorrectly choose the slide containing the inconsistent information. Bekerian and Bowers interpreted their findings as consistent with the hypothesis that misleading information does not erase the original memory but rather can render it inaccessible.

Others have suggested that participants remember the original information but report the misleading information in order to comply with experimental demand characteristics (e.g., Turtle, 1984; McCloskey & Zaragoza, 1985a, 1985b; Zaragoza, Janis, & McCloskey, 1987; Smith & Ellsworth,

1987). For example, Smith and Ellsworth (1987) manipulated perceived experimenter credibility and found that those adult participants questioned by a highly credible experimenter reported the misinformation but participants who were questioned by an experimenter who lacked credibility did not report the misleading information. Zaragoza, Janis, and McCloskey (1987) found that when response biases were eliminated from the experimental situation, the accuracy of misled adult participants' reports was comparable to that of control participants' reports. Similarly, Ceci, Ross, and Toglia found that the tendency for young children (3- and 4-year olds) to report misleading postevent information was reduced when the misinformation was provided by a 7-year old child rather than by an adult.

Regardless of whether memory for the event actually changes, the fact that witnesses may report postevent information that is inconsistent with their original recollection is cause for concern. Jurors depend on eyewitnesses to provide them with a description of the witnessed event in order that they may render a verdict. The trustworthiness of such verdicts seems uncertain given jurors' reliance on eyewitness confidence to infer testimony accuracy and the poor predictability of eyewitness accuracy from confidence. Furthermore, Lindsay, Wells, and Rumpel (1981) found that changes in eyewitness accuracy do not necessarily produce changes in eyewitness confidence. Thus,

an inaccurate witness may deliver his or her testimony with the same degree of certainty as an accurate witness and may thereby compromise the efficacy of cross-examination and contribute to unjust sentencing.

B. The Malleability of Eyewitness Confidence

Turning now to the possibility that eyewitness confidence can be altered independently of reported memory, Leippe (1980) proposed that merely thinking about a witnessed event might bolster eyewitness confidence. He derived this idea from the finding of Tesser (1978) that people's attitudes toward stimuli such as artworks and people tended to polarize with post-exposure-thought about the stimulus. Wells, Ferguson, and Lindsay (1981) empirically tested this proposition by staging thefts for unsuspecting participants, who later attempted to identify the thief from a set of photographs. Subject-witnesses who identified a member of the photospread were cross-examined. The cross-examinations were videotaped and later shown to mock jurors to evaluate. Prior to being cross-examined half of all subject-witnesses were briefed about the types of questions they could expect under cross-examination and were encouraged to rehearse possible answers to the questions. The briefings were expected to increase the witnesses' thoughts about the witnessed event and, thus, bolster eyewitness confidence. Elevated confidence was expected to enhance perceived eyewitness credibility.

The results indicated that briefed witnesses did express more confidence in their suspect identifications than did non-briefed witnesses. The elevated confidence associated with the briefing manipulation was primarily attributable to increased certainty on the part of inaccurate eyewitneses. The briefing manipulation produced statistically significant increases in expressed confidence for inaccurate but not accurate eyewitness identifications. The briefing manipulation thereby eliminated any discriminability between accurate and inaccurate eyewitnesses. Subject-jurors were also significantly more likely to convict the accused if he had been identified by a briefed eyewitness rather than an eyewitness who was not briefed.

The practice of briefing witnesses before they take the stand is a common courtroom procedure. This practice augments the difficulty of the task faced by jurors of distinguishing accurate from inaccurate eyewitness accounts. Unfortunately, the practice of briefing eyewitnesses is probably not the only source of inflated eyewitness confidence. In fact, "police officers and lawyers probably engage in numerous behaviors that promote a commitment-confidence spiral" (Leippe, 1980, p.272).

Is it possible to only raise eyewitness confidence, or might confidence also be lowered by social influences? The present research addressed this question by investigating a potential source of reduced eyewitness accuracy-confidence

correspondence; specifically, the interaction of a police officer with an eyewitness after he or she attempts a suspect identification.

The officer is probably aware of the lineup member(s) considered suspect by justice officials, despite the recommendation given by Wells (1988, Recommendation 6.8) in his recent handbook of system variables that the officer conducting the lineup should *not* know who the suspect is. If the witness identifies a suspect the officer might, intentionally or unintentionally, inform the witness through blatant or subtle feedback that he or she has aided the investigation. Alternatively, if the witness identifies a member of the lineup who is known to be innocent, the officer (again knowingly or unknowingly) might convey his disappointment to the witness. Any such feedback given to a witness concerning his or her choice of a lineup member might, in the case of positive feedback, enhance eyewitness confidence or, in the case of negative feedback, diminish eyewitness confidence. Changes in eyewitness confidence might, in turn, influence the decisions made by jurors.

The present research investigated the effects of lineup identification feedback on eyewitness confidence and perceived eyewitness credibility. The guiding hypothesis was that eyewitness confidence could be both raised and lowered by providing eyewitnesses with either positive or negative feedback concerning their identification of a suspect. Positive-identification feedback was expected to bolster

eyewitness confidence and thus enhance perceived eyewitness credibility and negative feedback was expected to reduce eyewitness confidence and, in turn, elicit low ratings of perceived eyewitness credibility from subject-jurors. This research is only the second empirical assessment of the malleability of eyewitness confidence and its implications for triers-of-fact.

In addition to attempting to both raise and lower eyewitness confidence, it differs from the original eyewitness confidence malleability study conducted by Wells, Ferguson, and Lindsay (1981) in another important way. Specifically, whereas the Wells et al. study focused only on the tractability of *adult* eyewitness confidence, the present research addressed the malleability of eyewitness confidence in both adults and children. The testimony of child eyewitnesses is being introduced to trial proceedings with increasing frequency. In many cases (e.g., instances of sexual abuse or kidnapping), a child may be the sole eyewitness for the prosecution. Whereas over a decade of research devoted to the study of adult eyewitness testimony has yielded a good understanding of the conditions under which such testimony may be considered trustworthy, parallel research with child eyewitnesses has only recently commanded the attention of researchers. The pivotal role now frequently played by children in courtroom proceedings and the diminished understanding of children's eyewitness capabilities in comparison to adults' warrants the inclusion

of child eyewitnesses in eyewitness testimony research.

The results of studies of children's susceptibility to misleading postevent information converge on the finding that young children's memories are more malleable or subject to distortion by social influences than are memories of older children or adults. Might young children also be more more suggestible than older individuals in terms of the malleability of their confidence in the accuracy of their memories? The present research tested this hypothesis. The young children's expressed confidence was hypothesized to be more sensitive to the feedback manipulation than that of the adolescents or adults. As mentioned previously, a number of studies have documented developmental differences in the apparent suggestibility of children verus adults on memory tasks (e.g., Ceci, Ross, & Toglia, 1987; Goodman & Read, 1985; Cohen & Harnick, 1980). More specifically, these studies found young children to be more suggestible, more likely to be influenced by leading questions, than adolescents or adults. These findings might indicate that children are more susceptible to suggestion in general. There is also evidence in the developmental literature that supports the notion that children might be more likely than adults to infer a sense of confidence in the appropriateness of their actions or responses from feedback provided by another individual. For example, Harter (1985) found that children of five or six years of age, in contrast to older children and adults, failed to evaluate their own actions

and subsequently generate feelings of pride or shame but rather relied on the approving or disapproving reactions of significant others to infer whether they should feel proud or ashamed.

II. Method

A. Overview

The experimental paradigm was modeled upon a two-phase procedure developed by Wells (e.g., Lindsay, Wells, & Rumpel, 1981; Wells, Lindsay, & Ferguson, 1979). In the first phase, grade 1, grade 7, and university students individually viewed a simulated crime film depicting a grocery store robbery and subsequently attempted to identify the thief from a 6-person photospread. Witnesses received either positive, negative, or neutral feedback concerning their identifications.

Witnesses who made an identification were then subjected to cross-examination questioning while being videotaped. In the second phase, adult subject-jurors viewed the cross-examination testimony videotapes and evaluated the witnesses' accuracy, confidence, and believability. They then rated their willingness to convict the accused on the basis of the witness' testimony.

B. Phase 1

Participants

The participants were eighty-six male and female grade 1 students, 96 male and female grade 7 students, and one hundred and four introductory psychology students from the University of Alberta. The elementary and junior high school

students were recruited from three Edmonton elementary schools and two Edmonton junior high schools, respectively. The university students participated in partial fulfillment of a course requirement.

Procedure and Design

Participants were randomly assigned to conditions in a 3 (Age: 6-years old vs. 12-years old vs. adult) x 3 (Identification Feedback: positive vs. neutral vs. negative) between-subjects factorial design.

All participants viewed the simulated crime film individually with no knowledge that their memory for the film would later be tested, thus simulating the natural eyewitness experience wherein the eyewitness does not anticipate the witnessed event. In order to prevent participants from anticipating a memory task, they were first shown a filmed tennis match and were asked to evaluate the luck, effort, and ability of the tennis players. Participants then watched the simulated crime film with the expectation that they would be asked to make evaluative judgments similar to those made subsequent to viewing the tennis match. The crime film depicted a grocery store robbery wherein a young man entered the store, loitered in one of the aisles until the cashier was free of customers, then approached the cashier carrying a hand gun concealed by a newspaper, demanded the money in the cash register, and finally fled with the cash in a plastic bag.

After viewing the filmed robbery, participants were told that the film was actual surveillance camera footage of a grocery store robbery currently under investigation. The experimenter explained that the research was sponsored by a local security company, in co-operation with the Edmonton Police Department, as part of an evaluation of video equipment used to monitor banks and stores. Participants were asked to pretend that they were actual eyewitnesses to the robbery and to attempt to identify the thief from a set of photographs.

Half of the eyewitnesses were to view a target-present lineup (sometimes called a valid lineup) and half were to view a target-absent lineup, with the goal of obtaining equal numbers of accurate and inaccurate identifications for each of the age and feedback conditions to be evaluated by participant-jurors in the second phase. Eyewitnesses can accurately identify a perpetrator only from a target-present lineup. Inaccurate identifications can be derived from either target-present or target-absent lineups. In previous research with adult eyewitnesses, false identifications have predominated in target-absent lineups. Thus, all of the accurate identifications were expected in response to a target-present lineup and most of the inaccurate identifications with presentation of a target-absent lineup.

This held true for the adult and adolescent eyewitnesses. However, the recognition performance of the 6-year old children was much poorer than expected. Indeed,

for this age group the rate of correct identifications with a target-present lineup was well below chance level. Administering a target-absent lineup to half of these witnesses while seeking equal numbers of accurate and inaccurate identifications would have involved testing at least 250 additional grade 1 students. This number well exceeds the number of child participants available through the Edmonton Public School Board. So, this practical consideration necessitated the administration of only a target-present lineup for the young children in an attempt to secure a reasonable number of accurate identifications from this age group. Even with this procedure (target-present lineup only), the number of available grade 1 participants was exhausted yielding only less than one third of the target number of accurate identifications.

Witnesses were instructed to: "try to identify the person who robbed the store, he may or may not be present in this set of pictures," and were given the option of either choosing a photograph or foregoing such a decision if none of the photos was thought to resemble the thief.

Subsequent to the identification task, participants received either positive, negative, or neutral feedback about their identification. Witnesses who made an identification and received positive feedback were told, "Good. That person is a suspect in the case and is currently being investigated by the police. I'll record your decision in our report". Witnesses who made an identification and

received negative feedback were told, "Oh. That person is *not* a suspect in the case. I'll record your decision in our report". Witnesses given neutral feedback were told only, "I'll record your decision in our report". All witnesses who rejected the lineup received neutral feedback.

Witnesses who made an identification were asked to rate their confidence in their choice on a 5-point scale. The scale was designed such that it could be understood by the grade 1 children as well as by the adolescents and adults. Specifically, the confidence measure consisted of five boxes of increasing size. Witnesses were instructed to regard the size of the boxes as an index of degree of certainty in their lineup decision and to put an "x" or a check mark in the box that best represented their confidence in their decision (see Appendix A). Law enforcement officials often ask witnesses how confident they feel about their identification of a suspect. Witnesses' personal assessments of confidence can drive the investigatory process, and may also be included in a courtroom report.

Witnesses who made an identification were next questioned orally by a second experimenter, blind to the identification accuracy of the witness, about their memory for the film and their identification of the thief. Specifically, witnesses were asked 10 questions; 5 non-leading or straightforward questions (e.g., "How tall would you say the robber was?") and 5 leading or suggestive questions (e.g., "Can you describe the hat the robber was

wearing?" when the robber was, in fact, not wearing a hat) (see Appendix B). All interrogations were videotaped. In total, 14 accurate and 72 inaccurate grade 1 witnesses, 48 accurate and 48 inaccurate grade 7 witnesses, and 46 accurate and 58 inaccurate adult witnesses were videotaped while responding to questioning.

At the conclusion of the cross-examination, the witnesses were thanked for their participation and fully debriefed. The child eyewitnesses were also instructed as to actions they should take if they were ever to witness a crime (e.g., paying close attention to details such as license numbers of suspicious cars, notifying an adult immediately).

C. Phase 2

Participants

Two hundred and eighty-six introductory psychology students from the University of Alberta participated in partial fulfillment of a course requirement.

Procedure

Participants were tested in groups of 2 - 4. Each person was shown to a cubicle with a television monitor and was asked to watch one of the Phase 1 testimony videotapes. Subsequent to viewing the videotape, participants were asked to judge (1) the number of questions the witness answered

correctly; (2) the apparent confidence of the eyewitness (on a 7-point scale), (3) the believability of the eyewitness (on a 7-point scale) (see Appendix C), (4) whether they believed the witness had correctly identified the thief (see Appendix D). These four measures are referred to subsequently as "perceived examination accuracy", "perceived examination confidence," "believability," and "perceived identification accuracy," respectively. [These measures should not be confused with the two main measures in Phase 1, namely self-reported confidence and actual examination accuracy.] Finally, participants were asked to respond to a series of questions concerning their willingness to convict the accused on the basis of the witness' testimony, subsequently called the "conviction measure". More specifically, participants were asked to indicate their willingness to convict the accused given pieces of evidence that varied in terms of how incriminating they were. For example, participants were asked whether they would be willing to convict the accused if (1) the fingerprints of the accused matched fingerprints found on the check-out counter in the grocery store or (2) the accused confessed that he had robbed the store (see Appendix D). The categories of information were presumed to be successively increasing in terms of how incrimininating the information contained therein was. Because these seven categories were all measuring a similar dimension (i.e., willingness to convict), a MANOVA was used prior to deciding whether or not

to examine the individual categories.

III. Phase 1 Results

A. Accuracy of Testimony

A 3 (Eyewitness Age) x 3 (Identification Feedback) x 2 (Type of Question: leading vs. non-leading) analysis of variance (ANOVA) on the accuracy of witnesses' responses to cross-examination questioning revealed a signficant main effect for eyewitness age, F (2, 137) = 76.05, $p < .001$, and a significant Age x Type of Question interaction F (2, 137) = 11.06, $p < .001$ (see Figure 1). Whereas the young children's testimony was significantly less accurate in response to leading questions than to non-leading questions, F (1, 274) = 12.49, $p < .01$, the reverse was true for the adults, F (1, 274) = 42.03, ($p < .01$). The 12-year olds were equally accurate in responding to leading versus non-leading questions. The main effect for identification feedback and the Age x Feedback interaction were both non-significant (both $ps > .60$).

B. Self-rated Confidence of Eyewitnesses

An analysis of variance on eyewitnesses' self-reported confidence ratings yielded significant main effects for eyewitness age F (2, 277) = 12.74, $p < .0001$, and for identification feedback F (2, 277) = 18.75, $p < .0001$. The interaction was not significant, F (4, 277) = 1.97, $p > .10$.

A Newman-Keuls analysis indicated that the 6-year old eyewitnesses reported significantly higher levels of confidence in the accuracy of their identifications than did the 12-year old or adult eyewitnesses ($p < .05$) The 12-year old and adult eyewitnesses did not differ in terms of their self-rated confidence (see Figure 2).

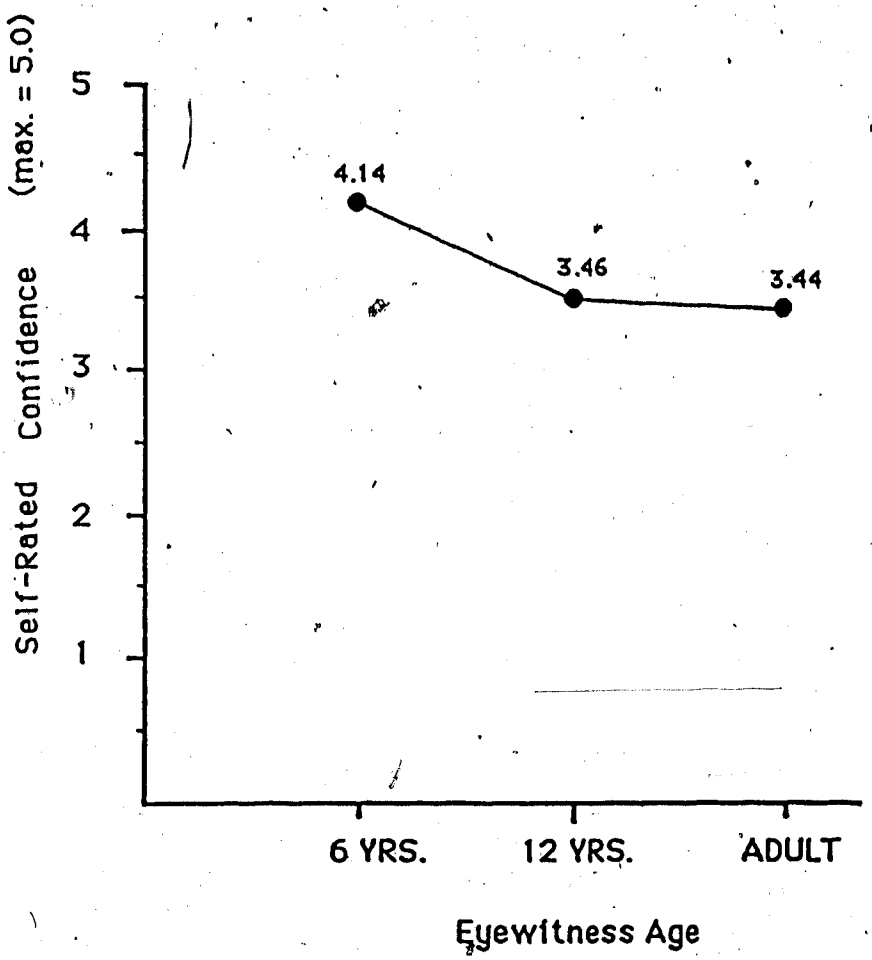

Figure 2: Self-Reported Confidence as a Function of Eyewitness Age

Furthermore, as depicted in Figure 3, eyewitnesses who received either positive Identification feedback or neutral feedback rated themselves as signficantly more confident that they had identified the thief than did witnesses who received negative identification feedback ($p < .05$). Self-rated confidence did not differ across positive and neutral feedback conditions.

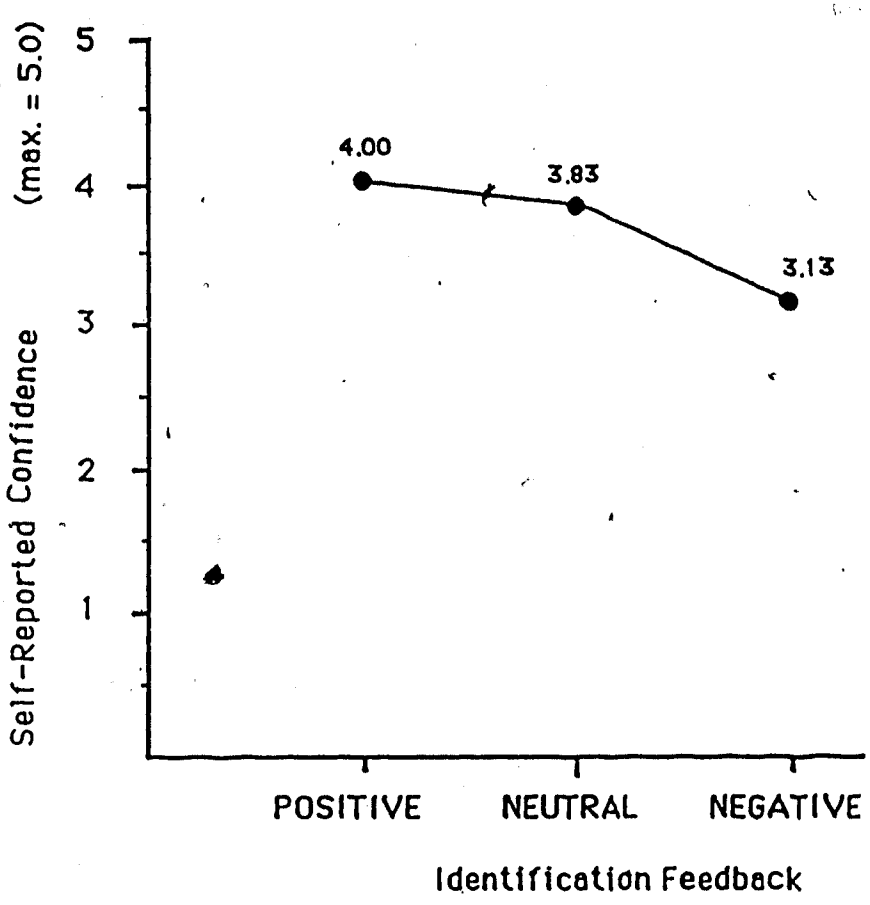

Figure 3. Self-Reported Confidence as a Function of Identification Feedback

Within the three age groups the correlation between identification accuracy and self-rated confidence was small. The accuracy-confidence correlation was -.19, .15, and .21 for grade 1, grade 7, and adult eyewitnesses respectively. This correlation was significant for the 6-year olds and adults ($p < .05$) and non-significant for the adolescents.

IV. Phase 2 Results

Initial analyses of the correlations among the four main measures, namely believability, perceived examination confidence, perceived examination accuracy, and perceived identification accuracy were conducted. These correlations are reported in Table 1 both overall and as a function of eyewitness age. Within the three age groups a similar pattern of correlations emerged. Specifically, believability, perceived examination confidence, perceived examination accuracy, and perceived identification accuracy were all highly inter-correlated (all $ps < .0001$). This pattern of correlations indicated that a multivariate analysis of variance of these measures would be appropriate.

Table 1

Correlations Among Selected Dependent Measures

		I	II	III	IV
I	6-Years	X	.65	.48	.40
	12-Years	X	.64	.59	.31
	Adult	X	.60	.54	.37
	Overall	X	.64	.55	.37
II	6-Years	.65	X	.70	.47
	12-Years	.64	X	.63	.42
	Adult	.60	X	.53	.47
	Overall	.64	X	.64	.37
III	6-Years	.48	.70	X	.47
	12-Years	.59	.63	X	.42
	Adult	.54	.53	X	.48
	Overall	.55	.64	X	.42
IV	6-Years	.40	.47	.45	X
	12-Years	.31	.47	.45	X
	12-years	.37	.48	.41	X
	Overall	.37	.46	.42	X

Note: All correlations significant at $p < .0001$.

I. Perceived Exam. Accuracy II. Believability

III. Perceived Exam. Confidence IV. Perceived ID Accuracy

A. Multivariate Effects

A three way multivariate analysis of variance (MANOVA) of Eyewitness Age x Identification Feedback x Identification Accuracy on subject-jurors' ratings of perceived examination accuracy, believability, perceived examination confidence, and perceived identification accuracy revealed no significant main effect for identification accuracy (or any significant interactions involving this independent variable), and so all subsequent analyses were collapsed across accurate and inaccurate witnesses. The MANOVA yielded a significant main effect for eyewitness age, Wilk's lamda = .91, F (8, 528) = 3.15, $p < .01$, but no significant interactions involving the age variable (all ps > .60). Subsequent univariate F-tests indicated a significant main effect for eyewitness age on perceived examination accuracy, F (2, 268) = 4.98, $p < .01$, believability, F (2, 268) = 6.04, $p < .01$, and perceived examination confidence, F (2, 268) = 5.62, $p < .01$. The effect of eyewitness age on perceived identification accuracy was not signficant, $p > .60$.

The MANOVA also revealed a marginally signficant main effect for identification feedback, Wilk's lamda = .95, F (8, 528) = 1.89, $p < .06$. Subsequent univariate-F tests yielded a significant main effect of identification feedback on subject-jurors' ratings of believability, F (2, 268) = 3.60, $p < .05$, and perceived identification accuracy, F (2, 268) = 4.28, $p < .05$. There was no significant main effect for identification feedback on perceived cross-examination accuracy, or perceived confidence under cross-examination

(both ps > .90).

B. Univariate Effects of Eyewitness Age

Perceived Examination accuracy

A Newman-Keuls analysis revealed that the 6-year old eyewitnesses were perceived as significantly less accurate under cross-examination than either the 12-year olds or adults ($p < .05$). The 12-year old and adult eyewitnesses did not differ in terms of their perceived testimony accuracy (see Figure 4).

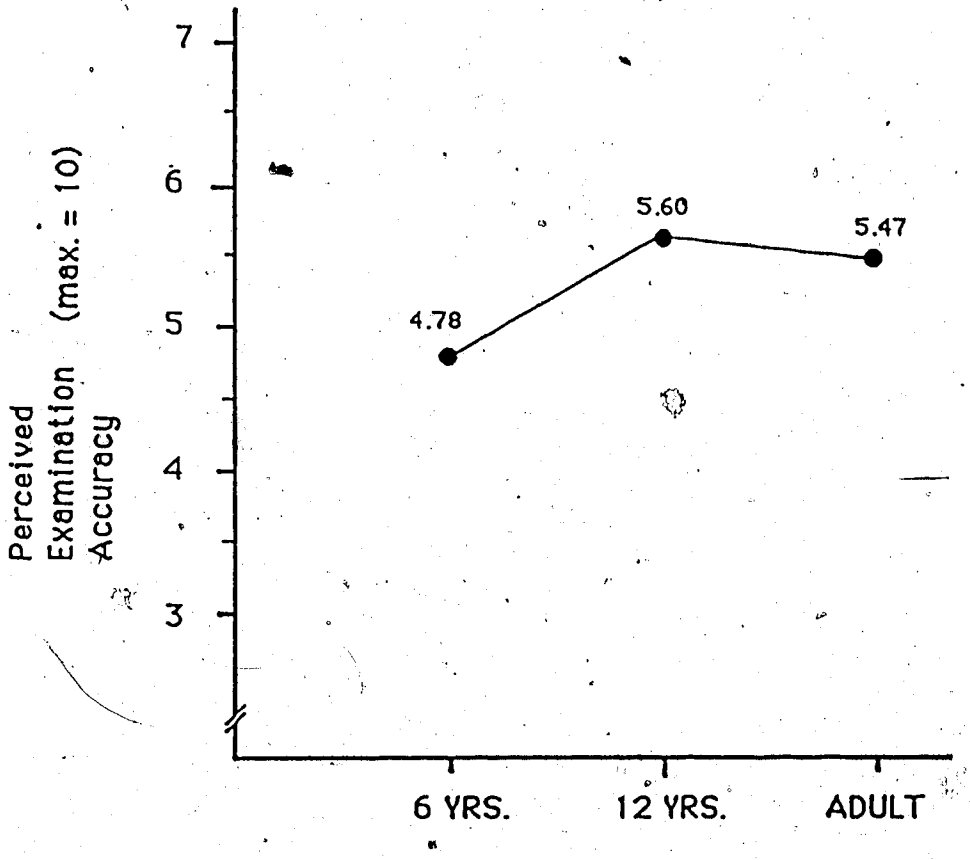

Figure 4. Perceived Examination Accuracy as a Function of Witness Age

Perceived examination confidence

A Newman-Keuls analysis indicated that the 6- and 12-year old eyewitnesses did not differ in terms of their perceived confidence under cross-examination. These witnesses were perceived as significantly less confident under cross-examination than the adult eyewitnesses ($p < .05$) (see Figure 5).

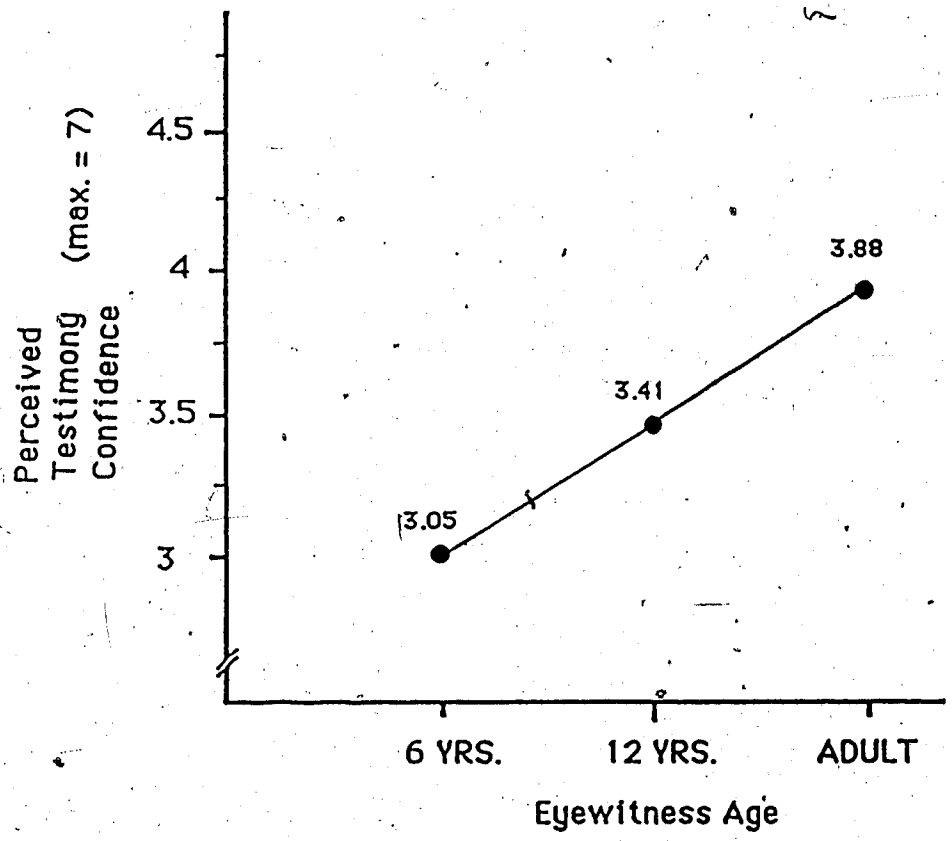

Figure 5. Perceived Testimony Confidence as a Function of Eyewitness Age

Believability

Subject-jurors rated the 6-year old eyewitnesses as significantly less believable under cross-examination than the 12-year old or adult eyewitnesses ($p < .05$, using the Newman-Keuls procedure). The 6- and 12-year old eyewitnesses did not differ in terms of their believability. (see Figure 6).

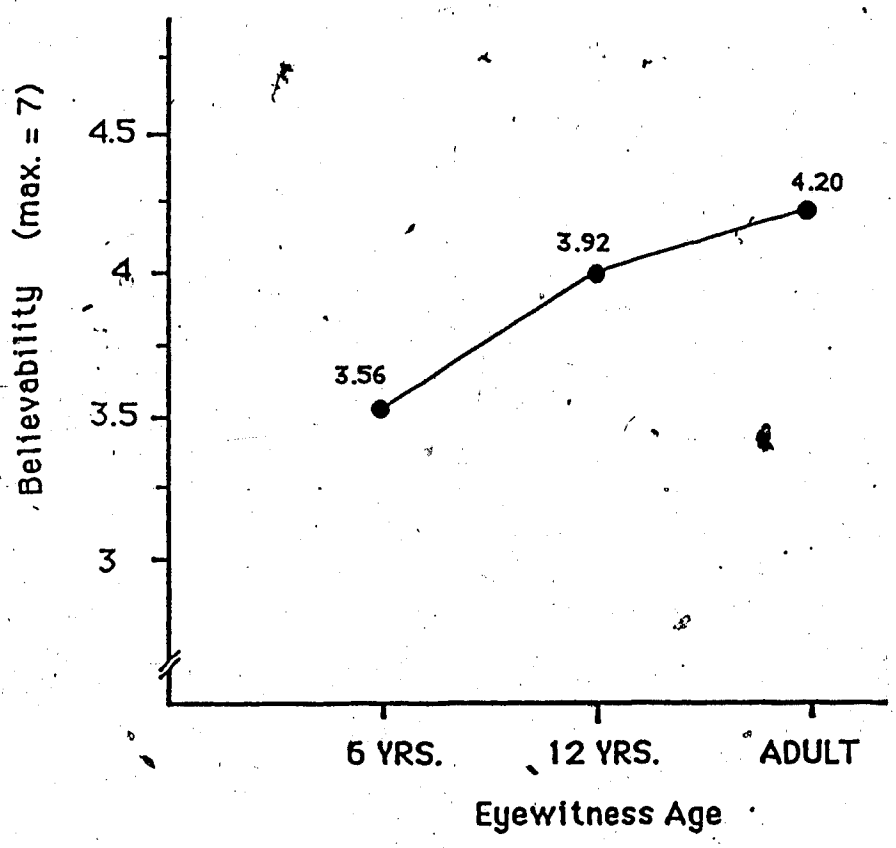

Figure 6. Believability as a Function of Eyewitness Age

C. Univariate Effects of Identification Feedback

Believability

Eyewitnesses who received positive or negative feedback were perceived as significantly less believable under cross-examination than witnesses who received neutral feedback ($p < .05$, using a Newman-Keuls procedure). Witnesses who received positive and negative feedback did not differ in terms of their believability (see Figure 7).

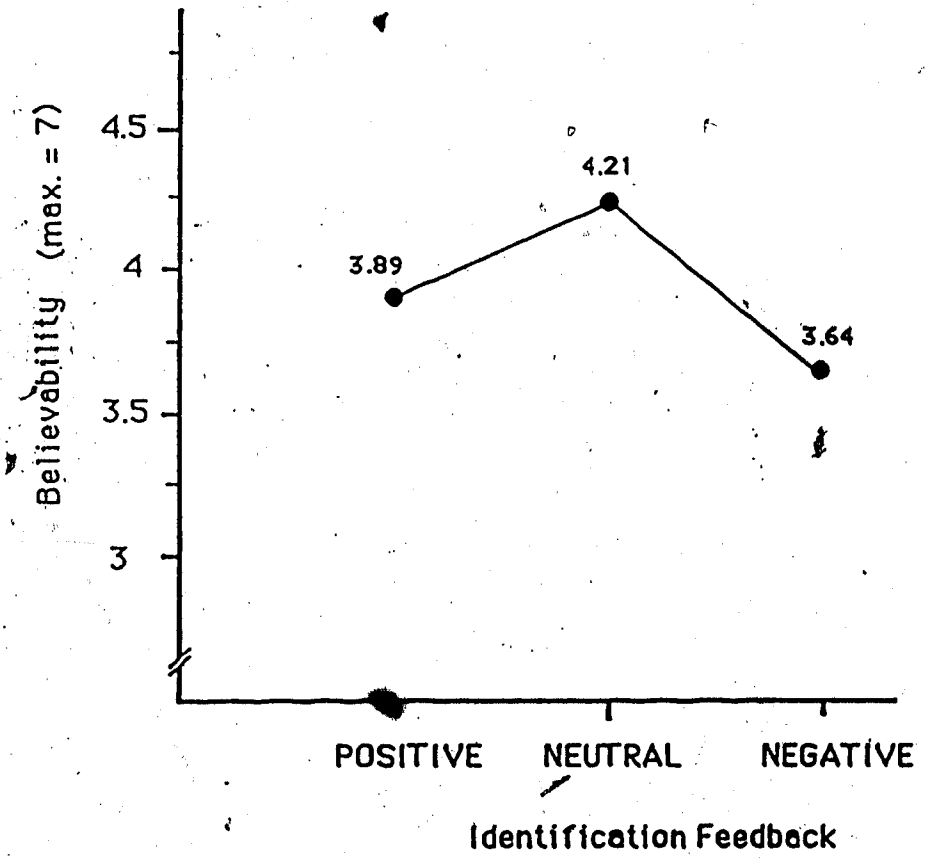

Figure 7. Believability as a Function of Identification Feedback

Perceived identification accuracy

A Newman-Keuls analysis indicated that witnesses who received negative Identification feedback were perceived as less likely to have correctly identified the thief than witnesses who received either positive or neutral feedback ($p < .05$). Witnesses who received positive and neutral identification feedback did not differ in terms of their perceived identification accuracy (see Figure 8).

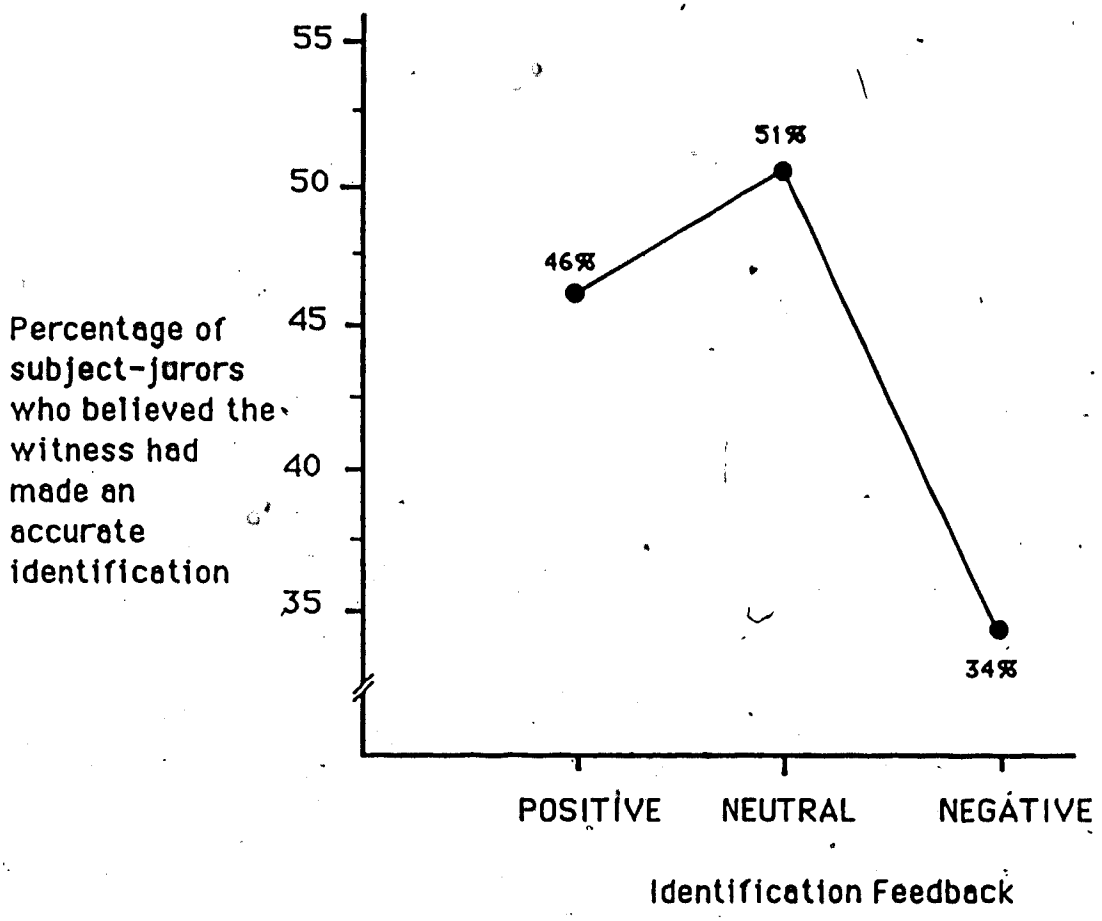

Figure 8. Perceived Identification Accuracy as a Function of Identification Feedback

D. Conviction Measure

A multivariate analysis of variance (MANOVA) on subject-jurors' data concerning the level of evidence or information they considered necessary to prosecute the accused (see Appendix D) revealed a signficant main effect for identification feedback, Wilk's lamda = .91, F (14, 542) = .91, $p < .05$. Subsequent univariate F-tests revealed a signficant main effect for identification feedback on the first category (A friend of the accused swore that he was with the defendant at a private residence at the time the robbery was committed), F (2, 277) = 34.83, $p < .05$, and on the final category (the accused admitted that he had robbed the store), F (2, 277) = 28.66, $p < .05$. The main effect of eyewitness age was not significant, Wilk's lamda = .92, F (14, 542) = 1.54, $p > .09$, nor was there a significant Age x Feedback interaction, Wilk's lamda = .89, F (28, 979) = 1.10, $p > .40$).

As depicted in Figure 9, if the defendant had an alibi, a significantly higher percentage of subject-jurors were willing to convict him if he had been identified by an eyewitness who had received either negative or neutral feedback rather than positive identification feedback ($p < .05$, using a Newman-Keuls procedure). The percentage of subject-jurors willing to convict versus not convict did not differ as a function of whether the accused had been identified by an eyewitness who received either neutral or negative feedback.

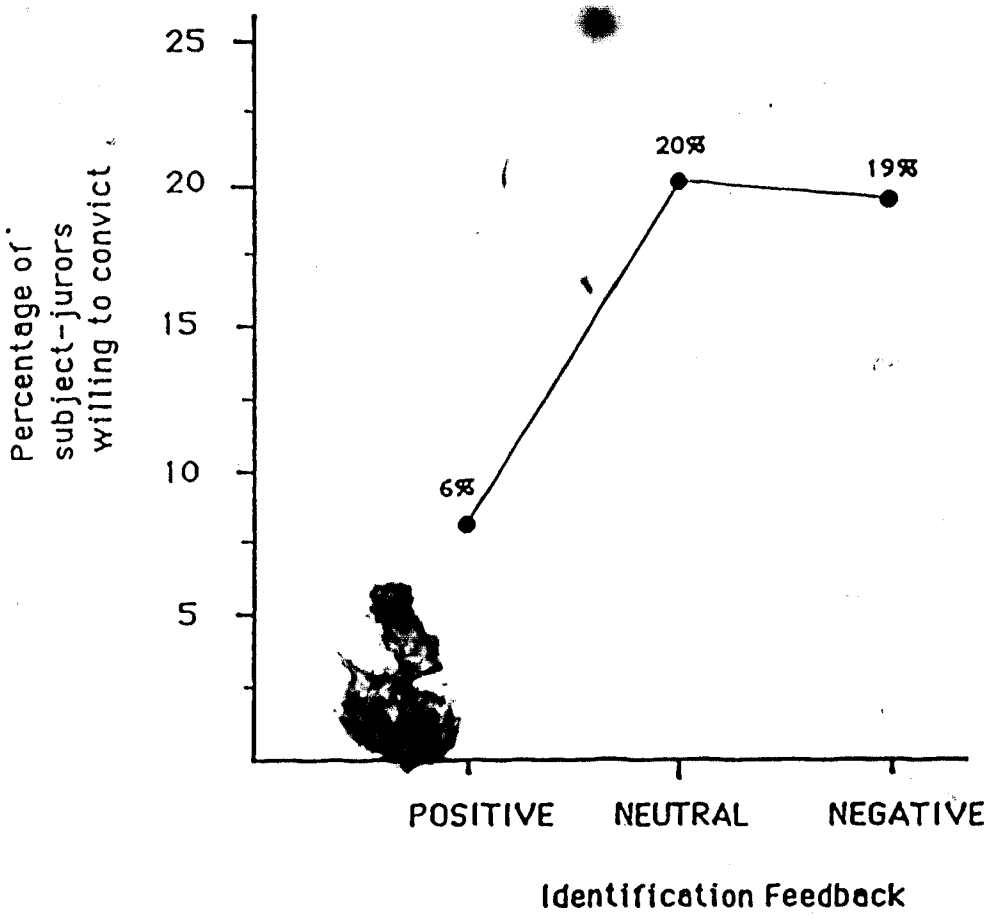

Figure 9. Percentage of Subject-Jurors Willing to Convict the Accused if He Had An alibi As a Function of the Type of Identification Feedback the Witness Had Received

However, Figure 10 shows that if the defendant confessed that he had committed the robbery, a significantly higher percentage of subject-jurors were willing to convict the accused if he had been identified by an eyewitness who had been given positive feedback rather than a witness who had received either neutral or negative feedback ($p < .05$, using a Newman-Keuls procedure). Equal percentages of subject-jurors were willing to convict the accused if he had been identified by a witness who had received either neutral or negative feedback.

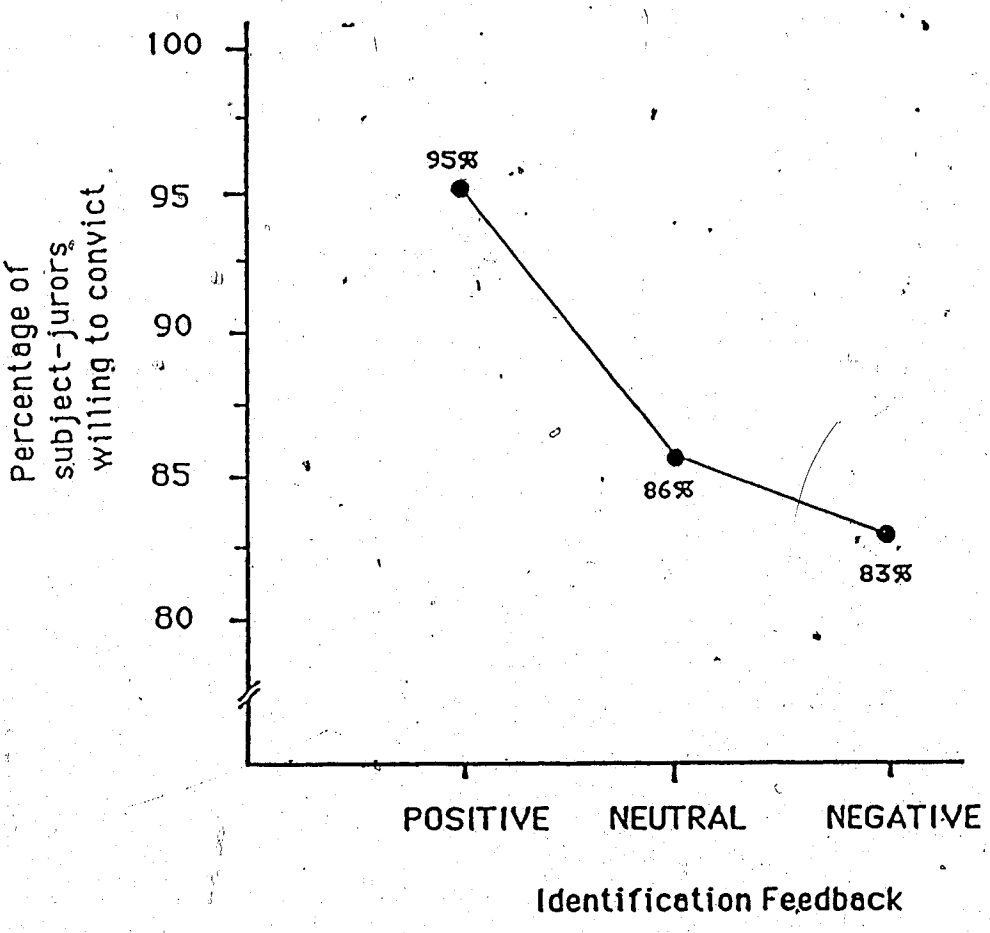

Figure 10. Percentage of Subject-Jurors Willing to Convict the Accused if he Confessed to Committing the Robbery as a Function of the Type of Identification Feedback the Eyewitness Received

V. Discussion

This research tested the hypotheses that eyewitness confidence can be both raised and lowered by external sources, that the perceived credibility of the witnesses would be similarly influenced by these external sources, and that children's eyewitness confidence is more malleable than adults' eyewitness confidence. The results provide partial support for the first hypothesis; eyewitness confidence was successfully reduced but not bolstered by external sources. The second hypothesis was also partially supported in that external sources influenced perceived credibility, albeit sometimes in unpredicted directions. There was no support for the third hypothesis.

A. Feedback Effects

Feedback and Self-Rated Confidence

The experimenter's comments or feedback concerning the witnesses' suspect identifications influenced the confidence expressed by both adult and child eyewitnesses in their having successfully identified a robbery suspect. Children and adults reported feeling less confident that they had identified the perpetrator if they had received negative feedback (i.e., a suggestion that the person they identified was not a suspect in the case) than if they had received either no feedback or positive identification feedback (i.e., a suggestion that they had identified a suspect in the case). However, witnesses who received positive feedback reported feeling no more confident about their

identification than witnesses who were given neutral feedback.

Why did positive feedback not enhance the witnesses' confidence? An answer to this question might lie in witnesses' assumptions concerning the structure of the lineup; that is, whether witnesses believed that each lineup member was a suspect (all-suspect lineup model), or believed that there was only one suspect in the lineup (single-suspect lineup model, see Wells & Turtle, 1986). If the witnesses assumed that an all-suspect lineup model was used, they would have presumed that whomever they identified was one of several suspects in the case. Thus, telling witnesses that they had a identified a suspect (positive feedback condition) might have been redundant with what the witnesses had already assumed and might therefore have been no more informative than providing no identification feedback. Informing a witness that the lineup member identified was *not* a suspect (negative feedback condition), however, would have disconfirmed the witness' assumption concerning the lineup model and thus force the witness to realize that he or she had not identified one of several people under investigation, but rather had incorrectly identified an innocent person.

Unfortunately, there has been no research directed at the assumptions that are made by eyewitnesses regarding lineup composition. Although the current finding suggests that the eyewitnesses assumed that all of the lineup members were suspects, more direct means would need to be used to examine these assumptions. One obvious approach would be to

simply ask people how many of the lineup members they think are suspects in the case prior to their viewing the lineup. Another, perhaps better, approach would be to manipulate the information: Some would be told that all are suspects, some would be told that there is only one suspect, and others would be told nothing. If the witnesses' behaviors (e.g., rates of choosing, expressed confidence) are similar in the all-suspect and no-information conditions but are different in the one-suspect condition, then we might conclude that people are naturally assuming that lineups are composed entirely of suspects. These assumptions might prove important, especially in light of strong mathematical proofs that the all-suspect lienup is a high-risk procedure that, according to Wells and Turtle (1986) should never be used in actual police practices.

Feedback and Perceived Confidence

The effects of the identification feedback manipulation did *not* extend beyond eyewitnesses' self-rated confidence to jurors' ratings of *perceived* confidence. Indeed, perceived confidence did not vary across the feedback conditions. In attempting to explain this seemingly incongruent finding, it should be noted that whereas the feedback was related to witnesses' identifications, jurors' confidence ratings concerned witnesses' *testimony*, not their *identifications*. Thus, it is not particularly surprising that the identification feedback manipulation influenced *self-rated* confidence (where the confidence measure was related specifically to the identification) but not *perceived*

confidence (where the confidence measure pertained to the general testimony). Nor is it particularly surprising that subject-jurors' judgments of testimony *accuracy* were also uninfluenced by the feedback manipulation as this measure was also related to perceived *testimony* accuracy in general, not perceived *identification* accuracy specifically.

In hindsight, the decision to measure perceived confidence of the general testimony, rather than or in addition to the perceived confidence of the identification portion of the testimony, was a mistake. Such a measure would have represented the closest possible link between measures in Phase 1 and Phase 2. Previous research (e.g., Wells, Lindsay, & Ferguson, 1979) has reported a strong correlation between self-reported identification confidence and jurors' perceptions of identification confidence (r = .55, $p < .01$). The correlation in this study between self-reported confidence and jurors' perceptions of general testimony confidence was weak (r = .07, $p > .10$. Thus, had the Phase 2 measures in the current study been perceived *identification* confidence rather than perceived *testimony* confidence, the feedback effect might have emerged as expected.

Feedback and Perceived Identification Accuracy

One of the credibility measures, namely perceived identification accuracy, did pertain to witnesses' identifications but not to their testimony. This measure should thus have been more susceptible to feedback effects than the testimony-related credibility measures and this

proved to be the case. Moreover, the pattern of feedback effects associated with perceived identification accuracy paralleled the pattern related to witnesses' self-rated confidence. Indeed, just as eyewitnesses reported feeling more confident about their identifications if they received positive or neutral feedback, so subject-jurors rated witnesses who received positive or neutral feedback as more likely to have correctly identified the perpetrator than witnesses who were given negative feedback.

Feedback and Believability

In addition to influencing perceived identification accuracy, the feedback manipulation impacted on jurors' judgments of eyewitnesses' believability. Unlike the perceived identification measure, believability ratings were not related specifically to witnesses' identifications but rather to the *overall* believability of eyewitnesses. It is thus understandable that the feedback effects associated with believability were *not* the same as those associated with perceived identification accuracy.

Negative feedback lowered believability relative to neutral feedback. Surprisingly, positive feedback also had this effect. So, subject-jurors rated witnesses who had received either positive *or* negative feedback as similarly believable. These believability ratings were significantly lower than those assigned to witnesses who had received neutral feedback.

Why might positive identification feedback have elicited cross-examination testimony from eyewitnesses that

was judged to be as believable as testimony provided by witnesses who had received negative identification feedback? Perhaps providing the eyewitnesses with *any* evaluative feedback subsequent to the identification task created an expectation within these witnesses that was the same for witnesses in both the positive and negative feedback conditions. Specifically, providing the eyewitnesses with any form of evaluative feedback concerning their identifications might have prompted them to expect that they would be given additional feedback following any subsequent memory tests. Witnesses who had received either positive or negative identification feedback might then have gone into the cross-examination session anticipating that they would be given feedback about their responses to the cross-examination questions. This expectancy might have translated into a style of answering the cross-examiner's questions that reflected a sense of uncertainty on the part of the witness, as he or she anticipated the cross-examiner's approval or disapproval of the testimony.

Alternatively, the witnesses might have become anxious about responding to cross-examination questioning when given feedback suggesting that they had either done well or had done poorly in attempting to identify the perpetrator. Those witnesses who received positive feedback might have experienced nervousness at the thought of trying to perform as well under cross-examination as they had in response to the identification task, while those eyewitnesses who received negative identification feedback might have anxiously viewed the cross-examination as a chance to do

better than they had done in attempting to identify the perpetrator. In both situations, the witnessses' nervousness might have been perceived by subject-jurors as a sign of discomfort associated with their being questioned about an event for which they had a poor recollection.

However, the plausibility of these two interpretations of the effect of feedback on believability is undermined by the fact that perceived confidence was *not* lower for the positive condition than the neutral condition. Both of the interpretations discussed above rest on the assumption that witnesses who received positive feedback were uncertain or nervous under cross-examination and that subject-jurors were sensitive to these feelings. Were this true, witnesses who received positive feedback should have been perceived as less confident as well as less believable than witnesses who were given neutral feedback. However, perceived confidence did not vary across feedback conditions.

What then might the source of the feedback effects associated with believability have been? Perhaps qualities of the witnesses' testimony related to the *origin* of their confidence (internal vs. external source) influenced jurors' assessments of believability. That is, while subject-jurors might have perceived witnesses who had received either positive or neutral feedback as equally confident, they might also have perceived qualititative differences in the confidence of witnesses who self-generated their sense of certainty (no feedback condition) as opposed to deriving it from an observer's praise concerning their performance (positive feedback condition).

No research to date has addressed the issue of the influence of the origin or source of confidence on qualities of eyewitness confidence. However, a recent study by Schooler, Gerhard, and Loftus (1986) investigated the qualities of real verus external (postevent) *memories*. This research is relevant to the current discussion as it rests on a similar proposition; namely that external sources of information (i.e., other people) can influence one's memory about a previously-witnessed event. Schooler et al. examined descriptions of objects that were either observed by or suggested to subjects. The descriptions of suggested objects were longer, qualified by more verbal hedges (e.g., "I think"), composed of more references to cognitive operations involved in recalling the object and fewer references to the physical attributes of the object than were descriptions of observed objects. Descriptions of suggested objects were also reported with less confidence than descriptions of observed objects. Schooler et al. later presented written transcriptions of the verbal descriptions to another group of subjects and asked them to judge whether the descriptions were of observed or suggested objects and to provide a written explanation for each of their decisions. Judges relied on a number of cues found in the descriptions, namely the apparent confidence of the description, inclusion of sensory properties of the object, and the mentioning of cognitive processes to classify the origin of the memory (real versus suggested).

Schooler et al.'s results might be related to the findings of the current investigation. Indeed, just as

Schooler et al.'s subjects provided qualitatively different descriptions of real versus suggested objects, so subject-witnesses from the present investigation might have provided qualitatively different testimony (e.g., qualification of statements by verbal hedges) or testimony behaviors (e.g., apparent confidence) depending on whether their confidence was based on an independent self-appraisal of the veracity of their memory versus an experimenter's feedback concerning their performance. Furthermore, like the judges in the Schooler et al. study, subject-jurors from the present investigation might also have perceived these qualititative differences, and then relied on these differences to judge the believability of eyewitnesses. More specifically, subject-jurors might have sensed a qualitative difference to the elevated confidence of eyewitnesses whose certainty was induced by an external social influence (i.e., another person) as was the case for witnesses who received positive feedback, and thus rated these witnesses as less believable than eyewitnesses in the neutral feedback condition who generated their sense of confidence independently of any external social influence.

Feedback and Willingness to Convict

Turning now to the effects of the feedback manipulation on another measure of perceived eyewitness credibility, namely the conviction measure, the type of identification feedback that witnesses received influenced jurors' willingness to convict the accused under two conditions: (1) if the defendant confessed that he had committed the crime,

and (2) if the defendant had an alibi. The condition marked by a confession was the *only* situation wherein positive feedback produced a stronger testimony than that induced by neutral feedback. Indeed, if the defendant confessed that he had robbed the store, a significantly higher percentage of subject-jurors were willing to convict him if he had been identified by an eyewitness who had received positive feedback rather than neutral or negative feedback. Surprisingly, the opposite pattern emerged if the defendant had an alibi. Subject-jurors were *least* willing to convict the accused if he had been identified by a witness who had received positive feedback.

This unanticipated finding, wherein the positive feedback produced a significant elevation of conviction votes when there was corroborative evidence (a confession) but a significant reduction in conviction votes when there was evidence inconsistent with the identification (an alibi), is interesting. This result indicates that positive feedback can indeed have negative effects on the credibility of the eyewitnesses' testimony, as was shown on the believability measure. Nevertheless, positive feedback could make the witness' testimony *more* incriminating than neutral feedback if there is additional evidence consistent with the identification. The mechanisms producing this pattern of results are unclear. No previous research has been directed at the ways in which identification evidence and other evidence are cognitively integrated, although the implicit assumption seems to be that evidence follows an additive model (e.g., see Saunders, Vidmar, & Hewitt, 1983).

Summary of Feedback Effects

The identification feedback effects were far more complex than anticipated. The effects of negative feedback were reasonably consistent in that it never enhanced testimony persuasiveness above the neutral condition but rather almost always lowered perceived eyewitness credibility relative to neutral feedback. The effects associated with positive feedback were considerably more complex and puzzling. Only when there was additional evidence that supported the witness' identification (i.e., where the accused confessed that he had committed the crime) did positive feedback produce a more cogent testimony than neutral feedback. However, in the absence of such corroborative evidence, not only did positive feedback fail to enhance testimony persuasiveness, it actually reduced witnesses' believability relative to neutral feedback.

B. Eyewitness Age Effects

Age and Self-Rated Confidence

Contrary to the prediction that the 6-year old eyewitnesses would be more sensitive to identification feedback than the adolescents or adults, the pattern of self-rated confidence summarized above, wherein witnesses who received either positive or neutral feedback reported feeling more confident about their identifications than witnesses given neutral feedback held for eyewitnesses of all ages.

It might be premature to conclude that children's confidence is not more malleable than confidence of adults. Two factors are probably required in order to manipulate confidence in an eyewitness. First, the eyewitness must be malleable in the ways discussed earlier (i.e., pliable as a function of external, non-memorial sources). Second, the eyewitness must be capable of interpreting or making inferences from the external information. The 6-year old children who participated in the present study might have been less capable than the adolescents or adults of making inferences from the positive and negative identification feedback. The impact of the feedback might thus have been less powerful for the young children than for the older witnesses. That is, the identification feedback was not a direct statement that the witness' identification was either accurate or inaccurate; instead, it was a statement that the witness had either identified or failed to identify a suspect. In order for this information to influence eyewitness confidence, witnesses must have understood what the terms "suspect" and "under investigation" meant. Whereas the majority of the adult and adolescent eyewitnesses were probably familiar with these terms and their meaning, many of the 6-year olds might not have been. Yet, the young children might still have been sensitive to the tone of the experimenter's voice in these feedback conditions and this might have been responsible for their reporting feeling more confident about their identifications in the positive feedback condition than in the negative feedback condition. However, had the young children understood the

experimenter's feedback and derived their confidence from this information (as the adults and adolescents probably did) rather than from the tone of the experimenter's voice, their self-rated confidence might have undergone more dramatic increases and decreases relative to no feedback in reponse to positive versus negative feedback.

Although no main effect predictions were made for self reported confidence as a function of age, the 6-year olds rated themselves as significantly more confident than the 12-year old or adult eyewitnesses. There are some difficulties in interpreting this main effect. On the one hand, this might reflect a true difference in the strength of the 6-year olds' feelings (relative to the adolescents' and adults') about the likelihood that they had in fact identified the correct person. On the other hand, this main effect for age might reflect differences in the use of the confidence scale. Again in hindsight it would have been useful to have a measure of jurors' perceptions of the witnesses' identification confidence. [Instead, however, perceived confidence concerned the witnesses' general testimony.] Had the jurors perceived the 6-year old witnesses' identification confidence as greater than that of the adolescents' or adults' identification confidence, then the scale-usage interpretation could have been ruled out because it could be reasonably assumed that subject-jurors used the scale in the same way for all eyewitness ages.

Age and Memory Malleability

The 6-year old children who participated in the present study seemed more suggestible than the adolsescents or adults with respect to their *memory* for the event. It should be noted that, unlike the confidence measure, the memory measure (i.e., the cross-examination) could be easily comprehended by eyewitnesses of all ages without their making any inferences concerning the experimenter's statements. The 6-year olds were less accurate in responding to leading or suggestive cross-examination questions than to non-leading questions. The adolescent and adult witnesses did not deliver less accurate testimony in response to leading than to non-leading questions. The large decrement in accuracy shown by the 6-year olds in response to leading questions is consistent with Wells et al.'s (in press) results concerning young children's testimony under direct verus cross-examination. Wells et al. found that 8-year old children provided testimony as accurate as that provided by 12-year olds and adults under direct examination where the questions were non-suggestive probes for a general description of the witnessed event. Under cross-examintion, however, the 8-year old children were signficantly less accurate than were the 12-year old or adult witnesses. In contrast to the direct examination, the cross-examination included a number of leading or suggestive questions, for example: "You claimed before that the playground was fairly crowded, is that correct?" (there were only two people at the playground), and "Would you agree that the man in the film was fairly short?" (the man was 6 ft. 2 in. tall).

Perhaps the young children who participated in the present study were more concerned than were the adolescents or adults with trying to tell the experimenter what they believed he or she wanted to hear rather than what they remembered about the crime. In cross-examining the witnesses, the experimenter asked them if they could describe the hat the robber (who was, in fact, not wearing a hat) was wearing. Whereas the 12-year old and adult eyewitnesses were generally quick to respond that they had seen no hat, many of the 6-year old witnesses sat quietly for a few seconds, then acknowledged that they did remember a hat. When pressed for a description of the hat, the 6-year olds' responses ranged from a shrug of the shoulders, signifying that they did not remember, to detailed descriptions of cowboy hats, baseball caps, and, in one instance, "a robber hat".

The results of a recent study by Ceci, Ross, and Toglia (1987) of children's susceptiblity to misleading postevent information support the idea that young children might be motivated to behave or respond in such a fashion as to satisfy what they believe to be the expectations of an adult authority figure. Ceci et al. found that very young children (3- and 4-year olds) were more vulnerable to suggestibility effects due to misleading postevent information than were older children (7- to 12-year olds) when the misleading information was provided by an adult. When the same information was provided by a 7-year old child, the suggestibility effects were reduced in the preschool-aged children.

Age and Perceived Testimony Accuracy

Perhaps more important than the accuracy of witnesses' testimony is the ability of jurors to *discern* this information, as trial outcomes are determined by jurors' *perceptions* of whether eyewitness testimony is accurate or inaccurate. Subject-jurors from the present investigation seemed sensitive to the reduced accuracy of testimony provided by the young children. In fact, jurors' estimates of testimony accuracy came very close to the actual testimony accuracy of child, adolescent, and adult eyewitnesses (see Figures 1 and 4). Note that this finding implies only that subject-jurors were sensitive to age-related differences in testimony accuracy, not that these jurors were able to discern the testimony accuracy of individual witnesses within the three age groups. Indeed, whereas a strong correlation between perceived examination accuracy and eyewitness age was found ($p < .008$, the correlation between witnesses' cross-examination testimony accuracy and jurors' judgments of testimony accuracy was small and non-significant ($p > .08$).

Age and Perceived Confidence

The 6- and 12-year old witnesses were perceived as significantly less confident in their general testimony than the adults. This finding is consistent with jurors' perceptions of the children as less accurate under cross examination than the adults. Indeed, investigations of the relationship between perceived eyewitness accuracy and perceived confidence have typically found a strong, positive

inter-correlation between these two variables.

C. Conclusions and Implications

This study is only the second empirical investigation of the tractability of eyewitness confidence and the first attempt to raise and lower eyewitness confidence in both children and adults. The present results support the finding of the original confidence malleability study (Wells et al., 1981) that eyewitness confidence can be influenced by extramemorial factors. These findings also underscore the recommendation made by Wells (1988) that the officer who administers a lineup should *not* know who the suspect is. Indeed, the present results suggest that what a police officer says to an eyewitness can have an impact on how confident the witness feels and how persuasive that witness is in providing courtroom testimony. A police officer or lawyer who prepares a witness for courtroom testimony and compliments the witness on how helpful he or she has been to the investigation might inadvertantly compromise the witness' believability, particularly if some exonerating evidence is presented in court (e.g., the defendant has an alibi).

Although positive feedback did not have the expected effect of enhancing eyewitnesses' confidence relative to no feedback, it might be premature to conclude that eyewitness confidence cannot be inflated by feedback from a lineup administrator. This study is only the first to investigate identification feedback, and the feedback manipulation used (i.e., informing witnesses that they had either identified

or failed to identify a suspect in the case) is only one of several possible manipulations that could have been employed. Other, perhaps more impactful, manipulations include (1) a simple change to the wording of the feedback used in the current study such that witnesses are informed that the person they identified is *"the"* suspect, rather than *"a"* suspect in the case, or (2) an acknowledgement that some other evidence is consistent with the witness' identification (e.g., another witness identified the same person, some physical evidence such as fingerprints or a car or weapon registered to the accused was found at the scene of the crime).

While the feedback effects associated with witnesses' self-rated confidence were limited to only reducing (but not enhancing) confidence ratings relative to no feedback, subject-jurors ratings of perceived eyewitness credibility were profoundly influenced by the type of feedback witnesses had received. For this reason, police officers might be well-advised to withold any comments concerning witnesses' identifications until the witnesses have rated their confidence in the accuracy of their identifications. This practice should help to ensure that jurors are provided with an unbiased estimate of witnesses' identification confidence. That is, it should help to ensure that witnesses' reported confidence is derived purely from the witnesses' memories rather than from the external influence of a police officer's comments concerning the identification.

The current findings support the conclusion that eyewitness identification confidence does not rest only on judgments of similarity (i.e., judgments of the extent to which the identified person resembles the person they remember from the witnessed event). Instead confidence can also be influenced by other factors that are unrelated to witnesses' memory for the perpetrator (e.g., whether or not witnesses are told that the identified person is a suspect).

The young children who took part in this study provided cross-examination testimony that was significantly less accurate than testimony provided by adolescent or adult eyewitnesses. Subject-jurors seemed sensitive to this fact. Indeed, their estimates of testimony accuracy came very close to the actual accuracy of testimony provided by child, adolescent, and adult eyewitnesses. Thus, it might be unecessary to caution jurors about the reduced accuracy of young children's cross-examination testimony because it appears that they might already be relatively well-calibrated in judging the accuracy of child versus adult eyewitnesses.

The current research suggests three issues toward which future research could be directed. First is the issue of witnesses' assumptions concerning the construction of lineups and photospreads (i.e., whether they believe that one member or all of the lineup members are suspects). Knowledge of these assumptions might explain why, in the present investigation, positive identification feedback did not enhance eyewitness confidence above no feedback. A second issue is the question of how and in what ways

positive feedback apparently evoked qualititative differences in witnesses' apparent confidence in testifying, and why testimony provided by witnesses given positive feedback required corroboration in order to be perceived as more credible than testimony from witnesses given no feedback. Finally, future research could study the effects of other manipulations of identification feedback than that used in the current investigation.

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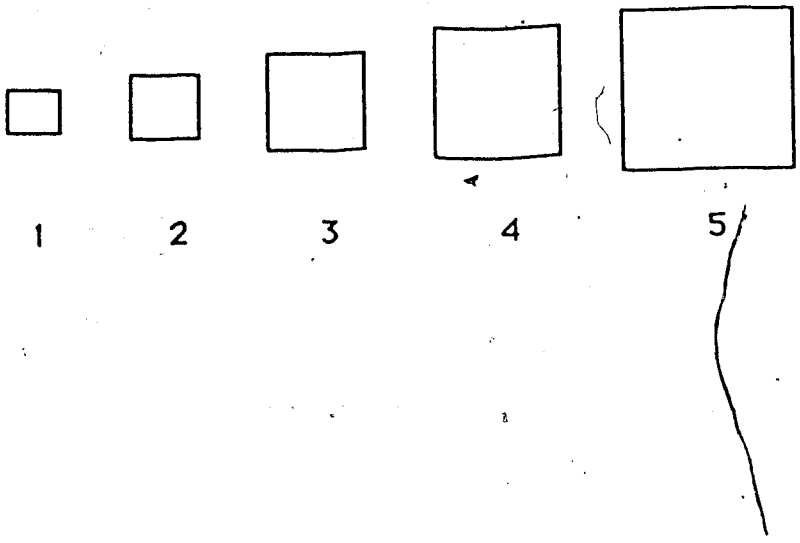
VII. Appendix A



VIII. Appendix B

"I'd like to ask you a few questions about the event and the person you identified as the criminal".

1. About how tall would you say the robber was?
2. About how much do you think he weighs?
3. Was the robber wearing a long coat or a short jacket?
4. What type of pants was he wearing?
5. About how long did you get to see the robber in the film?
6. Isn't it true though that the robber was facing away from you for most of the time?
7. What kind of hat was the robber wearing when he first walked into the store?
8. Can you describe the colour or design of the patch on the man's sleeve?
9. Can you describe the gun the man used to hold up the store?
10. Which pocket did the man put the money in when he ran from the store?

IX. Appendix C

Now that you have had a chance to view the witness testify, please complete the following scales

1. The witness was asked 12 questions. Ten of these questions can be scored as correct or incorrect.

How many of these 10 questions do you think the witness answered correctly?
(Circle only one number)

0 1 2 3 4 5 6 7 8 9 10

2. Please circle a number on the scale below to indicate how confident you thought the witness was in testifying.

1--------2--------3--------4---------5--------6--------7

Not at all confident	Moderately confident	Very confident

3. Please circle a number on the scale below to indicate how believable you thought the witness was.
(Circle only one number)

1--------2--------3--------4--------5--------6--------7

Not at all believable	Moderately believable	Very believable

X. Appendix D

Please respond to the following questions

3 a. Do you think the witness correctly identified the thief?

Yes No

3 b. How confident do you feel about your response to question 3a?
(Circle only one number)

1--------2--------3--------4--------5--------6--------7

Not at all Confident — Extremely Confident

4 a. Would you be willing to convict the person identified by the witness you just watched on videotape if:

-a friend of the accused swore that he was with the defendant at a private residence at the time the robbery was committed.

yes (willing to convict)

no (not willing to convict)

-the only evidence you had was the witness' testimony
yes (willing to convict)
no (not willing to convict

-the IGA store cashier also identified the accused as the person who robbed the store
yes (willing to convict)
no (not willing to convict)

-the accused was found in possession of a sum of money equal to the amount stolen from the store
yes (willing to convict)
no (not willing to convict)

-the fingerprints of the accused matched fingerprints found on the check-out counter at the IGA store
yes (willing to convict)
no (not willing to convict)

-the fingerprints of the accused matched the fingerprints found on the counter of the IGA store and the IGA cashier also identified the accused as the person who robbed the store
yes (willing to convict)
no (not willing to convict)

-the accused admitted that he had robbed the IGA store

yes (willing to convict)

no (not willing to convict)