How Do Triers of Fact Infer the Accuracy of Eyewitness Identifications? Using Memory for Peripheral Detail Can Be Misleading

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Eyewitnesses (n = 107) to a staged theft made identifications from a photo spread and then responded to 11 questions that measured their memory for peripheral details (e.g., how many pictures were in the room where the theft occurred?). Results indicated that witnesses who accurately identified the thief (n = 57) averaged fewer correct answers on the peripheral details test than did eyewitnesses who identified an innocent person (n = 32). The remaining witnesses (n = 18) made no identification. Cross-examinations of willing eyewitnesses who made an identification (47 accurate and 24 inaccurate) were conducted using a method that either scrutinized and documented the witnesses' memory for the peripheral details or did not. Subjects in the role of jurors (n = 96) viewed cross-examinations and indicated their belief that the witness had properly identified the thief versus an innocent person. The cross-examination that scrutinized and documented the witnesses' memory for trivial details lowered subjects' belief of the eyewitnesses' identification accuracy (from 72.9% to 47.9%). This discrediting effect was stronger for accurate eyewitnesses (75.0%-37.5%), however, than it was for inaccurate eyewitnesses (70.8%-58.3%). It is argued that subjects assumed a positive correlation between accuracy in identifying the thief and memory for peripheral details, which led to more discrediting of the witnesses who should have been believed than it did of the witnesses who should have not been believed.

A paradigm recently developed by Wells, Lindsay, and Ferguson (1979) presents the opportunity for analyzing the cognitive powers of jurors for discriminating between accurate and inaccurate eyewitnesses. The paradigm uses cross-examinations of eyewitnesses to staged events (e.g., staged crimes or events that may result in civil action) and presents the cross-examinations to triers of fact (e.g., jurors) who must then decide on the accuracy of the eyewitnesses' memory. At this point there are three studies showing that an eyewitness to a staged crime who has identified an innocent suspect from a lineup or picture array is as credible as is one who has identified the true culprit (Lindsay, Wells, & Rumpel, 1981; Wells et al., 1979; Wells, Lindsay, & Tousignant, 1980). Wells et al. (1979) provided evidence that this may be due to the weak or nonexistent relation-ship between witness accuracy and witness confidence in identifications (for reviews see Deffenbacher, 1980; Leippe, 1980) in conjunction with the fact that eyewitness confidence can account for up to 50% of the variance in jurors' decisions to believe eyewitnesses. Overreliance on witness confidence may not be the central problem, however, since Wells et al. (1980) found that expert advice to subject-jurors greatly reduced their reliance on witness confidence yet did not improve the jurors' discriminative performance.

Apart from subject-jurors' heavy reliance on eyewitness confidence, there is little empirical evidence on what other types of information jurors might use in inferring the accuracy of an eyewitness's identification (although see Loftus, 1979, Chap. 9, for a questionnaire approach). We first approached this issue by showing people videotapes of cross-examinations of eyewitnesses. Some of those subjects were asked to "think aloud" (as in Newell & Simon,
1972) in arriving at their eventual decision regarding the credibility of an eyewitness. We tape recorded their “thoughts” and later examined recurring themes. Reference to confidence, certainty, or composure was obviously of paramount import to our subjects, but we found an equally consistent reference to the witnesses’ memory for detail. For example, one subject said, “Geez . . . that guys [sic] even knows the color of his [the culprit’s] shoes . . . he was really paying attention.” More frequently subjects would mention lack of the witnesses’ memory for detail, for example, “She doesn’t even know anything about the calculator [that the culprit stole] . . . I don’t trust her memory. . . .” We found these comments particularly interesting in light of the literature showing negative correlations between performance on central versus peripheral tasks in adults (e.g., Hagen, Meacham, & Mesibov, 1970). Because of limited processing capacity, using one’s perceptual resources on one stimulus reduces the resources spent on another stimulus (Kahneman, 1973), although notable exceptions exist (i.e., holistic processing, see Navon & Gopher, 1979).

This literature on information processing suggests that attention to a criminal’s face during an event may preclude processing of other less central details and that good memory for trivial or peripheral factors may imply less, rather than more, encoding of the criminal’s facial features. To the extent that this is true, it contrasts with what appears to be the intuitive theory of our subject-jurors in the thinking-aloud study. We decided to test subjects’ intuitive theories about the correlation among memories of eyewitnesses (especially memory for facial recognition of the culprit in relation to memory for trivial details of the event) in conjunction with their implications for judicial decisions.

Method

Overview

In Phase 1 unsuspecting subjects witnessed the theft of a calculator and then viewed a six-picture photo array containing a mug shot of the thief. Eyewitnesses made an identification from the photospread and were then given an 11-item memory test for trivial, peripheral details of the event setting. Eyewitnesses with enough confidence to undergo further questioning were cross-examined using either a method that challenged their memory for the trivial details or not. In Phase 2 videotapes of the cross-examinations were presented to subjects who made judgments as to whether they believed that the eyewitnesses had identified the actual thief or had identified an innocent person. Assuming that memory for trivial details and ability to identify the actual thief are negatively correlated (a supposition that is testable in Phase 1), we felt that Phase 2 would be an adequate test of subjects’ intuitive appreciation for this negative correlation. Specifically, if subjects do not appreciate the negative relationships among these memories, we expected the trivial-details cross-examination would produce greater skepticism of the eyewitnesses who made accurate identifications than it would of eyewitnesses who had in fact identified the true culprit.

Phase 1

Subjects. Individuals from various sections of introductory psychology courses participated in partial fulfillment of a course requirement. There were 65 females and 42 males.

Procedure. The procedure for generating eyewitnesses was almost identical to that used in a recent study (see Wells et al., 1979, Phase 1), and the reader is referred to that article for a more detailed description. Subjects arrived individually with the expectation that they were to take a personality inventory; the confederate thief, posing as a second subject, entered the subject’s cubicle, made three innocuous remarks to the subject, took the calculator and exited from the room. The first remark was, “Do you know what the experimenter is expecting us to do next?” In addition to being a natural question asked by a late-arriving subject, it served to eliminate eight witnesses who indicated suspicion that the experiment concerned something other than the filling out of a personality inventory. These eight were not included in any of the data analyses.

There were three differences between this staged crime and that described in Wells et al. (1979). First, this study used a male thief. Second, the thief was in the same room as the eyewitness for 120 sec rather than 75 sec. Finally, after the witnesses attempted an identification from a photolineup and rated their confidence on a 7-point Likert-type scale, they were given an 11-item memory test. The 11 items were multiple choice items asking the witness to recall the following: the number of chairs in the room where the theft took place; the color of the walls in the room; whether the door to the room swung outward (toward the hall) or inward (toward the room); whether the door to the room had a window; how many light bulbs were in the ceiling; whether the light switch was on the left or right of the door; the color of the light switch; whether the room was carpeted or tiled; the color of the carpet or tiles; how many pictures were hanging in the cubicle; and whether the cubicle was square or rectangular. In each case the correct answer was provided among alternatives.

Each witness who identified someone was then asked
if she or he was willing to be cross-examined. Eighteen were not willing to be cross-examined. We suspect, however, that this attrition is natural (i.e., that it is reflective of real-world attrition among eyewitnesses in actual cases) because the witnesses who refused to be cross-examined had significantly lower confidence scores than did willing witnesses ($M = 5.05$ and 2.28 for witnesses willing and refusing to be cross-examined, respectively), $t(105) = 4.11$, $p < .01$. Witnesses who refused to be cross-examined, however, were not less likely to be accurate than were their willing counterparts.

**Phase 2**

**Subjects and procedure.** Ninety-six individuals from various sections of introductory psychology courses participated in partial fulfillment of a course requirement. On arrival each subject was directed to an individual viewing room that included a television monitor and a headphone set. Subjects were told that a crime had been staged some time ago for the benefit of a witness. The witness had agreed to be cross-examined with regard to his or her identification, and the subjects would see a videotape of that cross-examination. Each subject was told that his or her role would be that of a juror at the scene of the crime. Whenever an incorrect answer was given in the trivial details condition, the cross-examiner said that he would "like to make it a matter of record that the witness could not remember this." The cross-examiner in the trivial details condition always followed the last question (confidence question as described above) with a list of the items not accurately recalled by that witness and said, "How can we believe that this witness has accurately identified the thief when (s)he can't even recall these simple facts?"

Forty-eight witnesses' cross-examinations were sampled for presentation to the subject-jurors (12 accurate witnesses and 12 inaccurate witnesses from each of the two cross-examination conditions). Selection of witnesses was random within conditions. Each subject-juror observed only 1 eyewitness's cross-examination. After viewing the cross-examination the subject-juror was given a sheet and asked to indicate whether he or she believed the eyewitness had correctly identified the thief or had identified an innocent suspect.

**Results**

**Phase 1**

Table 1 presents the frequencies of accurate identifications, inaccurate identifications, and no identifications from the photo lineup. Clearly the most frequent choice was that of the true culprit. Consistent with a number of previous studies, however, the confidence expressed by those witnesses who identified an innocent lineup member averaged a level that is almost identical to that expressed by witnesses who had identified the true culprit (see for example, Brown, Deffenbacher, & Sturgill, 1977; Clifford & Scott, 1978; Deffenbacher, Brown, & Sturgill, 1978; Leippe, Wells, & Ostrom, 1978; Lindsay et al., 1981; Wells et al., 1979).

More directly related to the hypotheses under investigation is the relationship be-

<table>
<thead>
<tr>
<th>Measure</th>
<th>ID of thief</th>
<th>Inaccurate ID</th>
<th>No ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>57</td>
<td>32</td>
<td>18</td>
</tr>
<tr>
<td>Confidence*</td>
<td>5.12</td>
<td>4.93</td>
<td>3.00</td>
</tr>
<tr>
<td>Performance on</td>
<td></td>
<td></td>
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<tr>
<td>11-item memory</td>
<td></td>
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<td>for details test</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(no. correct)</td>
<td>6.36</td>
<td>8.50</td>
<td>5.11</td>
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*Higher values represent greater levels of confidence.*
between witnesses’ identification accuracy and their performance on the 11-item test of memory for details. Consistent with the proposition that identification of the thief’s face may be negatively related to memory for trivial details, we found an average of 8.50 items correct for the witnesses who had identified an innocent person and an average of 6.36 items correct for witnesses who had identified the true culprit, \( t(87) = 3.48, p < .01 \). Although the correlation between total number of items correct on the memory for details test and identification accuracy was appreciable \( (r = -.41, p < .05) \), not all items showed the negative relationship. One item, for example, had no variance (all witnesses knew the room was square), and therefore, this item could not be correlated with identification accuracy. Two items showed slight, but nonsignificant, positive correlations (number of chairs and which way the door swung). The remaining items were negatively correlated, although only one of these items was significant (number of pictures on the wall, \( r = -.62, p < .05 \)).

Phase 2

Subject-jurors’ belief data were coded 1 in the case of belief of the eyewitness and 0 in the case of disbelief. Scores were summed and averaged across the two subject-jurors for each witness. Thus each witness obtained a score of 0, .50, or 1.0. Multiplying these values by 100 yielded a percentage of subject-jurors believing each witness, which is summarized in Table 2 according to the witnesses’ identification accuracy and type of cross-examination. An analysis of variance showed a significant main effect for type of cross-examination, \( F(1, 44) = 7.3, p < .01 \), and a significant interaction, \( F(1, 44) = 4.38, p < .05 \). As shown in Table 2, the main effect for cross-examination type is due to a robust decline in the believability of the eyewitnesses who were cross-examined in the trivial details condition. The interaction indicates that this reduction in believability was stronger in the case of accurate-identification eyewitnesses than it was in the case of inaccurate-identification eyewitnesses. Although the belief rate for accurate eyewitnesses was not significantly lower than that for inaccurate eyewitnesses in the trivial details examination, the pattern of the interaction is consistent with the expected phenomenon. Apparently the reason this simple comparison (37.5% vs. 58.3%) was not significant \( (p \approx .11) \), even though the interaction was significant, is because there was a slight tendency to believe accurate more than inaccurate eyewitnesses in the control condition.

Neither the cross-examination main effect nor the interaction depicted in Table 2 appears to be mediated by the eyewitnesses’ confidence. Analysis of variance on confidence of eyewitnesses, as measured by responses to the last cross-examination question, showed no effects for eyewitness accuracy or type of cross-examination and no interaction (\( F_s < 1.6 \)).

Further evidence in support of our hypothesis of the mediating role of memory for details was a negative correlation obtained between the number of trivial details items that eyewitnesses got wrong during cross-examination and the subject-jurors’ reported belief of the eyewitnesses in the trivial details conditions \( (r = -.56, p < .001) \). No such correlation was obtained under the control examination \( (r = -.03, n.s.) \); nor was one expected, since the subject-jurors had no actuarial reference for the witnesses’ answers to the questions. Finally, the confidence of eyewitnesses, as measured by their answer to the final cross-examination question, was not significantly correlated with the number of trivial details questions incorrectly answered in either cross-examination condition \( (p_s > .7) \).
Discussion

The results obtained in Phase 1 indicate the important role that individual differences in information processing strategies may play in producing negative correlations among memories. Some subject-witnesses, apparently the majority, were attending to the thief's characteristics and processing little information about the peripheral factors (i.e., room trivia). Other subject-witnesses attended to peripheral, inanimate objects in the room, and this must have resulted in their poorer performance in being able to identify the thief. Those witnesses who identified no one seem to constitute a third group in that they were poor at both the room trivia items and failed to identify the thief.

Subject-jurors behaved as though the correlation between memory for the thief's characteristics and memory for peripheral trivia is positive. Subject-jurors were less willing to believe that an eyewitness had correctly identified the thief if the eyewitness had poor memory for peripheral trivia. This effect was not mediated by the confidence of the witness. In fact an analysis using witnesses' confidence (in response to the final cross-examination question) as a covariate increases correlation between subject-jurors' belief of the eyewitnesses and the number of items eyewitnesses got wrong in the trivial details conditions (from $r = -0.56$ to $r = -0.66$, $p < .001$). Thus it appears that the effects herein obtained are not due to the mediating role of eyewitness confidence but, instead, occur in spite of the eyewitnesses' unshakable confidence.

We suggest that our subject-jurors readily adopted the hypothesis that memories for peripheral trivia should be positively related to memory for the criminal's face. Discussions with our subject-jurors support this contention in that they freely verbalized their discounting of eyewitnesses in the trivial details conditions as being due to the fact that the eyewitness made so many errors in simple recall for documented facts. We see this as evidence supporting the use of expert testimony in court by psychologists and as evidence against some of the criticisms lodged at the use of the expert testimony as voiced by psychologists (e.g., Wells, 1978, p. 1551) and the courts (see Fishman & Loftus, 1978, p. 98). Yet we remain cautious in our arguments, as our generalization to actual cases may be limited.

First, our generalization attempts may be hampered by the fact that our subject-jurors were students. Although recent data suggest no differences between students and jurors in assessments of eyewitness testimony (Hosch, Beck, & McIntyre, 1980), we must keep in mind that our subject-jurors are younger, more homogeneous, and so on, than is the typical jury.

Another concern regarding generalization is the fact that our eyewitnesses knew that their identification would not have serious consequences for the accused, even though they thought that the theft was real at the time that the theft occurred. The eyewitness literature has not adequately addressed this issue. However, a recent study (Malpass & Devine, 1980) suggests that knowledge of serious versus nonserious consequences affects only the witnesses' willingness to identify, not their accuracy.

Finally, we used only a cross-examination, rather than also allowing for redirected examination from the prosecution. This could be construed as an unnaturalistic factor in our procedure. Yet by taking our measures prior to redirected examination we were able to show what can happen if the prosecutor fails to attempt a correction in the jurors' logic. Specifically, unless some aspect of the trial (e.g., expert testimony or redirected examination) can counteract observers' intuitions, a peripheral details cross-examination can mislead triers of fact.

References


Deffenbacher, K. A., Brown, E. L., & Sturgill, W. Some predictors of eyewitness memory accuracy. In M. M. Gruneberg, P. E. Morris, & R. N. Sykes (Eds.), *Prac-


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