EVALUATION AND FIELD IMPLEMENTATION OF THE COGNITIVE INTERVIEW

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Ronald P. Fisher & R. Edward Geiselman

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Sanders (1986) asked Sheriff's Deputies and detectives across the state of New York, "What is the central and most important feature of criminal investigations?" The majority of respondents answered "eyewitnesses." Nevertheless, few reported that they had any training on interviewing witnesses. While hundreds of studies have sought to document and give theoretical explanations for the fallibility of witness memory (see Loftus, 1979, and Yarmey, 1979, for reviews), only recently has research been conducted on police interview techniques to increase the completeness of a witness's report.

One dramatic technique for eyewitness memory enhancement is hypnosis. Hypnosis has been reported to be useful in criminal cases especially when trauma to the witness is involved (Reiser, 1976). Enhanced memory under hypnosis also obtains in some controlled laboratory experiments. On the whole, though, the evidence about memory under hypnosis is mixed. Many studies find no memory enhancement with hypnosis (see Smith, 1983, for a review). Of greater practical consequence, some researchers have concluded that hypnosis may distort the memory process (see Orne, Soskis, Dinges, & Orne, 1984). As a result of the inconsistency in the empirical literature, and as a general safeguard against the potential problems

encountered with memory under hypnosis, several U. S. states have placed restrictions on the admissibility of hypnosis recall in a court of law.

Review of Previous Research

In response to the need to improve police interview techniques, but circumventing the legal problems of hypnosis, Geiselman and Fisher (Geiselman, Fisher et al. 1984, 1985, 1986) set out to develop a non-hypnotic interview procedure based on two generally accepted scientific principles of memory. The resulting procedure, called the cognitive interview, is based on two such principles. First, a memory is composed of several elements. The more elements a memory retrieval aid has in common with the mental record of the event, the more effective the aid is likely to be. Second, a memory has several access routes, so information that is not accessible with one retrieval cue may be accessible with a different cue. Based on these two principles, Geiselman and Fisher suggested a set of four instructions that police should give to witnesses at the beginning of their interview. (1) Try to reconstruct the environment surrounding the original event and also your feelings and reactions to the event. (2) Report everything; do not edit anything out of your description, even things you may consider unimportant. (3) Report the events in different orders: forward, backward, or starting from

the middle. (4) Adopt different perspectives you may have had during the event, or of other prominent people at the event. In addition to these general instructions, the Cognitive Interview also contains specific suggestions to facilitate recall of appearance, names, numbers, speech characteristics, etc.

The cognitive interview was compared to standard witness interview techniques in three separate laboratory experiments. To create as much realism as possible in the laboratory, the events to be remembered were simulated violent crimes, as depicted on Los Angeles Police Department training films, and the interviews were conducted face-to-face by experienced law enforcement investigators. Across the three studies, the cognitive interview proved to elicit approximately 25-35% more information than did the standard police interview, and without generating any more incorrect information (Geiselman, Fisher et al. 1984, 1985, 1986).

New Developments

While the cognitive interview proved to be more effective than the standard witness interview, there were still some limitations. First, it had not yet been determined whether the cognitive interview influences witnesses' responses to misleading questions, as is sometimes suggested to occur with hypnosis. Second, the earlier studies examined only adult eyewitnesses. The

present research extends these findings by examining the cognitive interview with child eyewitnesses. Third, while the cognitive interview was more effective than traditional police interviews, there was still room for improvement. We therefore refined the technique on the basis of insights we had gathered during the earlier phase of testing. Finally, because the previous research was conducted in the laboratory, under ideal conditions, the cognitive interview was not designed specifically to meet the needs of police interviews in the field, with real victims and witnesses of crime. Because the goal of the present research was to develop a technique that would be effective in the field, we modified the Cognitive Interview to reflect those unique field conditions of police interviewing. This led to the final test of the refined Cognitive Interview under field conditions.

Misleading Question Effects and the Cognitive Interview

As a tool for investigation, it seems clear that the cognitive interview will be useful. From a legal perspective, it also is important that the cognitive interview be generally accepted as a reliable tool by the scientific community (Frye v. U.S., 1923). That is, it is important to demonstrate that not only is the cognitive interview an effective and reliable memory-enhancement device, but that it is free of technical

problems potentially associated with memory retrieval.

Two criticisms of forensic hypnosis that are relevant to this issue are (a) hypnosis induces the eyewitness to lower his or her criterion for reporting information, thus producing inaccuracies and confabulations, and (b) hypnosis heightens the negative effect of misleading questions on eyewitness memory (e.g., Sanders & Simmons, 1983). We are confident that the first criticism does not apply to the cognitive interview, as it has been shown in each of our previous studies that the cognitive interview enhances the completeness of eyewitness reports without an accompanying increase in inaccurate information. The aim of this experiment, then, was to address the second potential concern, the effect of the cognitive interview on eyewitness responses to misleading questions.

There are two possible ways in which the cognitive interview might affect the recollection of details about which misleading information has been presented. On the one hand, the interview might make the witness more suggestible, as is suspected with the hypnosis interview, and therefore the witness is more easily misled by the cognitive interviewer. On the other hand, arguments can be made that the cognitive interview should <u>reduce</u> a witness's susceptibility to misleading questions. First, if a misleading question serves to create a second memory

that coexists with the original one (Berkerian & Bowers, 1983), then reinstatement of the original context with the cognitive interview should facilitate the witness's retrieving the original (correct) memory. Or, because of greater memory access with the cognitive interview, the cognitive interview might prevent the replacement of the original memories at the time the misleading questions are asked.

Method

Subjects. The subjects were 42 undergraduate students recruited from introductory psychology classes at UCLA. These students were not informed in advance that their memory for a staged incident would be tested. Instead, they had volunteered to participate in an experiment on "improving your memory."

Staged incident. The scenario was carried out during the first meting with the subjects by three research assistants from the Theater Arts Department at UCLA. A female played the role of an experimenter from the psychology department and two males played the roles of intruders. The experimenter greeted the students upon arrival and informed them that they would be expected to memorize a long list of words. The words were projected one at a time onto a screen at the front of the room. After approximately 20 slides had been presented, the two males entered the room and turned on the lights. One

intruder pushed a cart that held a tape recorder and a typewriter. The other intruder carried a backpack with a yellow cord hanging out of it and stated that they were there to pick up the projector because it was scheduled be used by a professor. A verbal exchange ensued between the intruders and the experimenter in which several bits of key information were presented. This information included the name of the alleged professor, the name of one of the intruders, and a room number where the projector was to be taken. Despite objections be the experimenter, the intruders put the projector on their cart and left. The entire incident lasted between 45 sec and 1 min.

Procedure. The staged scenario was performed in the same manner on six separate occasions before different subjects. Each subject returned 48 hours after observing the incident and was assigned randomly to one of two groups. The two groups of subjects were taken to different rooms. At that time, the group that received the cognitive interview was instructed in the use of four memory retrieval mnemonics as described below to aid their recall. Then, both groups were asked to recall as much information as they could about the incident. Each subject in each group was given a printed test booklet that was to be used to record the information they recalled.

Evaluation Materials and Instructions. The first two pages of the test booklet were used to record the subjects' open-ended (narrative) recall of the incident. The subjects were told, "Indicate in as much detail as possible what you remember about the interruption of the experiment at our last meeting." Subjects in both groups were asked to put one item of information per line. Fifty lines were provided. The subjects were allowed to work on this question until all subjects in the group appeared to be finished.

Before the subjects in the cognitive interview condition began to answer the open-ended question, the experimenter instructed them in the use of four general memory-retrieval techniques to aid their recall. A large board was placed at the front of the room to display descriptors of the four methods as a reference guide.

Immediately following the narrative recall, the subjects were asked three specific questions. Space was provided in the response booklets for the answers to be written. For each subject, one of these questions contained misleading (incorrect) information, another contained leading (correct) information, and the remaining question served as the control, containing no supplemental information. The target interviews were a name (Dr. Henderson) that was mentioned by one of the intruders, the nature of the trousers (tan slacks) worn

by one of the intruders, and the color of a backpack (blue) carried by the other intruder. As an example, the three versions of the question referring to the backpack were as follows: leading version, "Describe whether anything was hanging out of the blue backpack carried by the guy who talked the most"; misleading version, "Describe whether anything was hanging out of the green backpack carried by the guy who talked the most"; control (no information) version, "Describe whether anything was hanging out the backpack carried by the guy who talked the most." The misleading information for the name and trousers questions was Dr. Davidson and brown corduroys, respectively.

Following those three questions, additional specific questions were presented in the test booklet as filler items. The subjects were asked to try to answer all of the questions, but they were not forced to guess. Some of the questions pertained to information about the intruding persons, including sex, race, age, weight, hair color and style, clothing appearance, and speech characteristics. Other questions asked the subjects to recall the events that comprised the incident including any conversation.

Then, the experimenter in the cognitive interview condition briefly reviewed the four general memory retrieval methods for the subjects. Subjects in the

standard interview condition waited for a comparable period of time (1 min). At the end of each test booklet, space was provided for the answers for three questions designed to assess the impact of the leading/misleading questions manipulation. The questions were read as follows: "What was the color of the backpack carried by one of the intruders?," "What was the name of the doctor who was mentioned?," "Describe the trousers worn by the intruder who pushed the cart?" The direct phrasing of these questions was to provide a strong test of eyewitness responses to the prior leading/misleading questions. Despite this phrasing, approximately one fourth of the subjects across conditions felt free to respond that they did not know the answer to a question.

Analysis. The comparison of interest was between the 2 types of interviews (cognitive vs. standard) for the 3 types of questions (leading, control, and misleading), with the dependent variable being whether or not the correct answers were given to the assessment questions.

Results and Discussion. The number correct data illustrate the considerable influence of leading and misleading questions on the accuracy of eyewitness reports. With leading (correct) information inserted, an average of 60 percent of the subjects reported the correct information; but with misleading (incorrect) information inserted, 10 percent of the subjects recalled

the correct information. Thus, the (mis)leading question manipulation was successful in this experiment.

The important aspect of the present data is that the cognitive interview did not enhance the (mis)leading question effects, but rather decreased both the effects of leading and misleading questions by .10 each. The difference in the percentage correct between the leading and misleading question conditions reflects the combined magnitude of the effects of those questions on memory performance. Thus, the difference in the percentage correct between the leading and misleading conditions was computed independently for each of the two interview conditions; and the difference between these two difference scores was evaluated statistically using a Z test for proportions. The difference in recall accuracy between the leading and misleading question conditions was .60 without the standard interview but .40 with the cognitive interview. These two values were found to be statistically different.

Thus, not only is the cognitive interview not suggestive; but it effectively insulates the witness, somewhat, from the negative effects of inadvertently asking misleading questions.

Interviewing Children

In recent years, an increasing number of children have been asked to testify concerning criminal events,

especially about events in which they were victim-witnesses. The legal and social service fields need better techniques for optimizing children's reports. Many court cases have been dismissed because of inadequate testimony and charges of faulty interviewing. When this happens, the already threatened mental health of child victims is probably further jeopardized, because of feelings of vulnerability, failure, betrayal, etc. Many studies have examined memory performance of children versus adults, but little research has been conducted to enhance the completeness of a child's report. In the following study, we therefore applied the cognitive interview to interviewing child eyewitnesses.

Method. Children between the ages of 7 and 12 years were shown a film of a simulated liquor store robbery. Three days later, they were interviewed by research assistants trained to use the original cognitive interview (Geiselman & Padilla, 1988). Each tape recorded interview was transcribed by other research assistants, and these transcriptions were given to another member of the research team who scored them for accuracy of recall. Three performance measures were tabulated: the number of correct bits of information, the number of mistakes (inaccurate reporting of information that appeared in the film), and the number of confabulations (reporting of information that did not

appear in the film in any form).

Results. The cognitive interview produced 21% more correct bits of information than the standard interview (37.1 versus 30.7). The number of mistakes and confabulations did not differ as a function of type of interview (5.0 versus 6.4; 6.4 versus 6.3). As in the other studies where adults were used, this pattern of results held for even the most critical facts from the film. Also, as before, the length of the interviews could not account for the advantage of the cognitive interview.

It was possible that an analysis of the individual interviews would reveal problems with some of the cognitive techniques, such as a failure of the children to understand the procedures or a failure of the children to use them effectively. To carry out this analysis, the tapes of cognitive interviews were scanned for indications of miscommunication; and a catalogue of the confabulations was generated to determine whether they could be linked to one or more of the memory enhancement techniques. While some changes in the interview format were indicated, as described below, it is important to keep in mind that the current adult version of the cognitive interview enhanced recall significantly without increasing errors in comparison to standard interview techniques.

(1) Reconstruct the circumstances. There was no evidence that the children could not understand and carry out this technique effectively. However, to avoid encouraging the child's fantasy world, there is some reason to believe that terms such as "pretend" and "imagine" should not be used (Cayle & Gallagher, 1987). Also, to ensure that the child understands and is expending the mental effort required, it is suggested that the child first be asked to describe the environment and personal context aloud and then be told to "Picture in your mind what it was like when you were there."

(2) Report everything. This instruction did not appear to increase the amount of confabulation. Children who gave detailed reports were no more likely to confabulate than other children (r=.13). However, given the higher rate of mistakes with children relative to adults (Geiselman et al., 1985) regardless of the type of interview, it may be useful to suggest to child witnesses that "it is very important to tell the truth about what you saw; tell only what you really remember; do not make anything up."

(3) Reverse order of recall. When the child had difficulty understanding this technique, it then was described as being like watching a movie going backward. All the children seemed to understand that analogy. Most children tended to make giant leaps when going backward

in time, such that whole chunks of information were skipped. Therefore, we suggest that the interviewer continually prompt the child with the question, "then what happened right before that?"

(4) Change perspective. Of all the memory retrieval techniques, the change-perspectives approach was the one that could be seen clearly as problematic with children. Of the 51 confabulations produced in the cognitive interviews, 31 could be linked directly to this method. Unlike adults, the children often reported what they guessed another person at the scene would have observed or would have done, rather than what they perceived. This outcome is consistent with the fact that perspective-taking skills develop gradually with age (Flavell, 1986). Thus, even though the entire cognitive interview package produced no more mistakes and confabulations than the standard interview format, it is suggested that the change-perspectives technique be used only with adults, where reliable success has been documented (Geiselman et al. 1986).

Refining the Cognitive Interview

This study reflects an initial attempt to take our research out of the laboratory and into the field, where actual crime interviews are conducted by police. In order to apply the Cognitive Interview in the real world of crime investigation, we first sought to examine a

sample of police interviews, to determine what techniques are currently being used by police investigators. The following is a description and critical analysis of these criminal investigations conducted by police detectives.

Interviews. In all, we examined 11 tape-recorded interviews conducted by members of the Robbery Division of the Metro-Dade Police Department. The interviews were conducted by 8 different, experienced detectives, averaging 10.5 years of police duty. The interviews were conducted over a period of four months (August--November, 1985) and covered a wide range of crime scenarios (with or without a lethal weapon; one or more suspects; daytime or evening; place of business, private residence, or on the street; Black, Caucasian, or Hispanic suspect; car, merchandise, or cash stolen; etc.), interview conditions (conducted immediately after the crime or several days later; conducted at the crime scene, at the victim's residence, or at police headquarters) and victims (Black, Caucasian, or Hispanic; young (11 years) to middle-age; men and women, etc.). Thus, the sample of interviews we examined are representative of various types of crime. After examining the taped interviews, we spoke with six of the interviewers to obtain their personal insights about the interview process and any difficulties inherent in

police interviewing.

General Overview. After several hours of careful analysis, it appeared that only a very loose structure can be used to describe the various interviews. Typically, the interviewer (Int) briefly introduces himself and then requests the eyewitness (E/W) to describe in narrative fashion what he or she can remember about the crime. After this standard opening request, there is considerably more variation than uniformity in the conduct of the interview. At some point during the interview, Int typically asks a variety of direct questions aimed at eliciting the pertinent actions that took place and a physical description of the suspect(s) involved. These questions are usually briefly worded and elicit an even briefer response.

Typical description questions are: How tall was he?, How much did he weigh?, Can you describe his body build?, etc. Virtually every detective requested information about the suspect's age, height, weight (or body build), race, facial hair, and some description of his clothing. In some interviews these questions were asked in sequence, one after the other, while in other interviews, the questions were asked individually and were distributed throughout. There was no obvious pattern that characterized the timing of these questions. Sometimes they occurred in the very beginning, during

E/W's narration, sometimes they followed the narration, and sometimes they were interspersed throughout the entire interview. Furthermore, their timing seemed to be generally uncorrelated with E/W's comments. (We shall discuss the significance of this matter later.) Frequently, although not universally, the interview ended with a general request for additional information ("Is there anything else that you can remember about the event?") and with a brief "thank you."

The most striking features of the interviews were that (a) there was very little uniformity in the structure; (b) most of the questions about pertinent crime facts were asked in a very direct fashion (e.g., "Was he wearing jeans?"; "Was he wearing any jewelry?"; "How tall was he?") often eliciting brief responses, either confirming Int's intuition, disconfirming it, or an "I don't know"; and (c) little or no assistance was given to enhance E/W's recollection: If E/W stated that he did not know, Int did little to facilitate his memory. We suspect that these conditions exist, in part, because little guidance is provided in the various police academies about conducting an interview with a cooperative E/W. (None of the six interviewers we spoke to reported having received any formal training in memory-enhancing techniques in interviewing cooperative eyewitnesses.) Police investigators are thereby left to

their own intuitions, on-the-job learning (e.g. observing more senior partners conduct interviews), and informal comments between colleagues. As a result of the lack of formal training in interviewing, especially in the scientific fundamentals of memory, police are forced to use their essentially lay knowledge of memory processes, and hence, the lack of scientifically based questioning procedures. As one police investigator said: Basically, you just ask them who, what, when, where, why and how.

Critique of Police Interviews. The primary thrust of this work is to critically examine some of the errors that police interviewers make, so that others may benefit from this exercise. As such, this section may appear negative in tone. As with other Monday-morning quarterbacks, it is considerably easier to sit back with the editorial luxury of replaying an interview five times before deciding on the appropriate question to have asked than to make the split-second decision required of the on-the-spot interviewer. It is likely, given the practical demands of the police interview, that the perfect interview is an unattainable myth. Our criticism, then, is not to pass judgment on current interviewing techniques, but rather, to indicate where improvements can be made to enhance eyewitness recall, and to give guidance, so that future interviews can be

conducted more effectively. We sincerely appreciate the cooperation of the Metro-Dade Police Department in permitting us to analyze their interviews. In the long term, their openness to criticism permits others to learn.

The remainder of this critique is organized into five sections: (A) Conceptual guidelines to promote effective E/W recollection, (B) Universal, major problems in police interview techniques, (C) Frequently occurring, minor problem techniques, (D) Practical constraints on effective police interviewing, and (E) Suggested modifications to circumvent problematic techniques. This paper is not intended as a manual for police interviewing. Rather, it is to be used as a simple guide to circumvent some of the more frequently occurring problems we observed.

(1) Conceptual Guidelines to Promote E/W Recollection.

One universally accepted principle of memory is that more information exists in our memory at any one time than we are able to recall. That is, at least some forgetting comes about, not because the information is not stored in memory, but because we fail to retrieve or activate information that does reside in memory (Tulving, 1974). It may well be the case that all past experiences are stored, and that all forgetting is the

result of failure to retrieve. No one knows this for sure, however, as a viable working hypothesis, it is reasonable to assume that recollection could be enhanced by providing appropriate retrieval cues to unlock inaccessible memories. Thus, when E/W claims that he cannot recall a particular fact, it may be that the desired information is in his memory store, but that the appropriate retrieval cue has not been provided to access it. The effective interviewer is one who can determine and construct the retrieval cue required to unlock the hidden fact--but without leading E/W.

One technique that works well to provide the appropriate retrieval cue is to encourage E/W to try to reinstate mentally both the psychological and physical context of the crime scene. In laboratory controlled studies, we instructed E/W to try to think about the physical environment and also his or her thoughts or emotions at the time of the event. This is a reasonably simple, and probably common-sense suggestion, yet we found that only one of the 11 Ints made any concerted attempt to do so.

A second, generally accepted principle of memory retrieval is that some facts that are not accessible when a particular retrieval perspective is used are accessible from a different perspective (Anderson & Pichert, 1978). That is, if E/W cannot recall a fact

when a particular question is asked, he or she may be able to recall it if the question were posed differently. For example, an E/W who says "I don't know" to "Was the suspect wearing any jewelry?" may recall that he was wearing a necklace if asked "Can you describe the suspect's shirt?." Thus, Int should try to probe for pertinent information through a variety of questions, if he fails to get an adequate response from the first, direct question. Typically, we found in the taped interviews that, if E/W responded with "I don't know" to a direct question, Int did not try to pursue the matter by asking alternative forms of the question.

Third, memory retrieval, like other cognitive acts, requires concentration. Lack of concentration lowers recall (Johnston, Greenberg, Fisher, & Martin, 1970). For a variety of reasons, E/W may not wish to engage the requisite concentration, unless he or she is expressly encouraged to do so, and the environment is conducive to focused retrieval. It is critical, therefore, for Int to encourage E/W to concentrate in his or her retrieval attempts. Second, it is important to conduct the interview in such fashion as to facilitate E/W's focused retrieval. What factors contribute to E/W's heightened concentration? First, E/W should be made to feel physically and psychologically comfortable with the interview environment; second, there should be no

distractions to divert E/W's concentration; third, E/W should be encouraged to focus attention on his internal mental image--as opposed to external sources of information. Under ideal conditions, to promote focused retrieval, E/W must be encouraged to feel that he or she has unlimited time to search through memory and to respond with the most elaborate, detailed answer possible, and that the success of the interview depends on his or her mental efforts, not on the interviewer's.

Finally, the interview must be conducted in a manner that is compatible with E/W's mental representation of the crime. That is, E/W's recollection of the crime is based on some internalized images of the episode. When a question is posed, E/W conjures up the relevant mental image and selectively reads out the information. For example, suppose E/W has two clear images of the suspect, one a left-profile image and one a head-on image. Questions about the left ear require E/W to draw up the left- profile image and then zero in on the left ear. Questions about the symmetry of the suspect's face require E/W to draw up the head-on portrait. Once this mental image is drawn up, it is "in focus," so to speak, and can be used to answer the next several questions--*if they are compatible with the image*. The careful interviewer will construct the ensuing questions so that they are compatible with the mental image currently

being used. If the ensuing questions are not compatible with the currently held image, E/W must engage in extra mental effort to conjure up a new mental image, one that is more appropriate for the new questions. Such a practice, of forcing E/W to switch mental images to answer Int's questions, detracts from effective memory retrieval (Fisher & Price-Roush, 1986). Rather than induce E/W to manipulate his mental images to be compatible with Int's questions, we recommend that Int coordinate his questions with the mental images used by E/W. Naturally, this interactive questioning requires Int to abandon any pre-determined sequence of questions and forces him to listen more intently to E/W's responses, to try to infer E/W's currently held mental picture. This additional effort on Int's part, however, will pay off in extracting more information.

(2) Universal Problems

Now that we have established a conceptual basis for effective interviewing techniques to promote E/W memory, let us examine some of the problems encountered in actual police interviews. Three techniques that potentially hinder memory appeared in all of the interviews we examined: interrupting E/W's description, asking too many short-answer questions, and inappropriate sequencing of questions. We shall treat these in turn.

Interrupting E/W's Description. All of the interviewers, after having introduced themselves briefly, initially asked E/W to describe in narrative fashion what he or she remembered about the event in question. This initial request for an open-ended description is highly recommended (see e.g., Stone & DeLuca, 1980). The problem came about in that E/W was interrupted frequently throughout the narration. In the 11 interviews observed, there were an average (median) of 3 open-ended questions that required an extended answer. In those 3 narrative answers, Int interrupted E/W 11 times, an average of almost 4 interruptions per response. In the typical interview, answers to open-ended questions were interrupted in one form or another after only 7.5 seconds of description. In none of the 11 interviews was E/W permitted to complete his or her narrative description without an interruption. This is particularly problematic, as one of our recent studies (Fisher, Geiselman, Raymond, Jurkevich, & Warhaftig, 1986) found that approximately 35% of all the correct statements that were elicited in an eyewitness interview were generated within the initial open-ended narrative description. By not permitting E/W to complete this initial narrative, there is the possibility of missing out on valuable information.

There are two inherent problems created by these

constant interruptions. First, they cause E/W to break his or her concentration on the memory retrieval process. If E/W is in the middle of describing a clear mental image, a process that demands considerable concentration, a request to alter this process will cause a loss in concentration, either because E/W must refocus from describing an internal mental event to listening to an external source (the interviewer), or because Int's question may require E/W to refocus his attention on a different mental image, one not currently in focus. In so doing, E/W's mental set is altered, thereby making it more difficult to resurrect the previous mental image.

Another potential problem created by these frequent interruptions is that after having been interrupted several times, E/W develops the expectation that interruptions will occur throughout the interview. That is, in some way, the interruptions become part of the interview format. The problem engendered by this expectation is first, that E/W may learn that he will have only a short period of time in which to give his response before the next interruption. When this occurs, E/W tailors his response to fit into the time expected. Naturally, any response that is foreshortened will be less detailed than one with no limits (no expected interruptions). Second, when E/W expects to be

interrupted within the next few seconds, he or she is less likely to make a concerted effort to retrieve a detailed image of the event. Instead, E/W is encouraged to conduct a less focused retrieval and generate a more superficial response.

Excessive Use of Question-Answer Format. A second, major problem found in all of the interviews is that they were conducted largely as a series of direct, brief questions--which elicited even more direct, briefer answers. To quantify the questions in the interview, we categorized each question as either an open-ended question, one that allowed E/W to generate a complex response including several pieces of information (e.g., "Can you describe the suspect's clothing?"), or as a direct, short-answer question, one that requested a specific piece of information (e.g., "What color was the suspect's shirt?"). In the typical interview, there were 3 open- ended questions and 26 short-answer questions, a ratio of almost 1:9. Usually, Int started the interview with a general open-ended question ("Can you describe what happened...?) and then within a few seconds into E/W's narrative response Int changed the format by asking a series of direct, short-answer questions.

There are, no doubt, merits to the direct, short-answer question. They elicit investigatively relevant information and keep E/W's description from

going far afield. At the same time, they also incur at least two major problems. First, it appears that E/W uses a less concentrated form of retrieval when answering direct, short-answer questions than when answering open-ended questions. The answers are generated after a shorter latency following the direct question, and the answers are briefer, oftentimes only a single word. Typically, when the interview has shifted into this direct, question-answer format, Int waits only 1 sec from the end of the previous answer to begin the next question. (There are no comparable data for the open-ended questions, as Int never allowed E/W to complete his answer before asking the next question.) The result of this question- answer format is that after generating a brief answer, E/W appears to wait for Int to formulate the next question. In so doing, the burden of the interview, the active mental processing, falls on Int, and E/W remains passive. It is difficult enough for E/W to retrieve detailed events from memory when actively trying; it is virtually impossible when he remains mentally passive.

The second problem with the direct, short-answer question format is that all of the information elicited is tied to the specific request. Questions about the suspect's height elicit information about height; questions about the color of the gun elicit just that,

the color of the gun. The parameters of the question are well defined, and so E/W terminates his response as soon as he has provided the requested information. Because of this, only requested information is gathered; no unsolicited information is generated. That creates two limitations. First, if Int forgets to ask a relevant question, that information will not be gathered. Second, even if Int asks all the nominally relevant questions, any idiosyncratic information, which Int could not reasonably anticipate (e.g., right index finger disfigured), may go unreported.

As we mentioned before, the direct, short-answer question has its value in forensic interviewing. Our suggestion, then, to make use of both the open-ended and direct, short-answer question, is to ask the open-ended question first, and allow E/W freedom to develop as elaborate an answer as possible. Then, after having completed this richly detailed response, if E/W has not covered some relevant information, Int should follow up with specific short-answer questions. As a guiding rule, though, Int should try to structure the interview so that most of the information is gathered through E/W's narrative responding rather than as a result of direct, short-answer questions (see Flanagan, in Grau, 1981, for similar recommendations).

Inappropriate Sequencing of Questions. The third, major problem we found in almost every interview is that the sequence of Int's questions was often incompatible with E/W's mental representation of the crime. That is, E/W's description of the crime indicated that his recollection was mediated by a specific mental picture of the event. However, Int's follow-up question was not appropriate for the activated mental representation. As a result, it is likely that the interview did not maximally tap E/W's memory of the event. There were three variants of this inappropriate sequencing. Some Ints posed the questions in a predetermined order, some in a lagging order, and some in a seemingly arbitrary order. We shall describe these, and the common problem they incur.

Many of the Ints asked questions about the suspect in the same order, in a fixed manner, as if it were being read from a standardized checklist. They asked first about age, then height, followed by weight or body build, facial characteristics, and finally clothing. In fact, on one occasion, when E/W began her description of the suspect's height, Int interrupted her and requested her to indicate the suspect's age first. When we asked the detectives why they conducted the interview in this predetermined sequence, most had no idea. Some indicated that they were taught the sequence at the academy, so

that the information would be compatible with the police report they would later fill out to describe the crime. While this sequence may be compatible with the police report, it is unlikely to be compatible with E/W's mental representation of the crime, the main source of investigative information. It is more effective to adjust the interview to be compatible with E/W's memory--and require additional manipulations to be done by the report writer--than to bias the interview toward the report--and require the additional manipulations to be done by E/W.

The second version of the incompatible sequencing of questions was the lagging order, in which Int's current question was related to a previous comment E/W had made. For example, in the open-ended narration of one interview, E/W described the suspect's hat and then his shirt. In the middle of the shirt description, Int interrupted to ask a follow-up question about the suspect's hat. In this case, it appeared as if E/W were describing the events faster than Int could take notes, so that Int requested her to backtrack to permit him to record accurately her comments. In other instances of this lagging question order, Int did not seem to be constrained by E/W's speech rate, but rather, he simply wanted to expand on some earlier mentioned topic. While this attempt at elaboration is certainly a desirable

goal, the problem was often the timing of the follow-up question. Too frequently, it came in the midst of E/W's description of another feature of the crime, so that the follow-up question interrupted E/W's train of thought. We suggest that, if Int wishes to ask a follow-up question to elicit greater elaboration, the question should either follow immediately after E/W's original statement, or it should be held in abeyance until after E/W has completed his description of the scene.

In the third variant of the inappropriate sequencing, the questions seemed to be ordered arbitrarily, independent of E/W's responses. There were two forms of this arbitrary sequencing. In one, all of the questions referred to the details of the crime, but each question referred to perceptually--and therefore memory--unrelated features. Oftentimes, the questions vacillated between one modality and another. For example, Int might ask a visually oriented question (e.g. about the suspect's face) followed by an auditory question (about a spoken name) and then return to the visual questioning (about the color of the clothing). Such alteration across modalities can cause up to a 19% reduction in eyewitness memory, according to a recent study (Fisher & Price-Roush, 1986). Even when the questions focused on one modality, they were often scattered across a variety of mental pictures. For

example, one interviewer asked one question about the suspect's face, followed by a question about his clothing, followed by a question about eyeglasses. Note how the question about eyeglasses, which is mediated by E/W's mental picture of the suspect's face, addresses the same mental image as the question about the suspect's face, and therefore, should be asked contiguously. Nevertheless, these two related questions were separated by a question about an unrelated mental image.

The second form of arbitrary sequencing of questions reflects the interjecting of general knowledge questions in the middle of E/W's report of the crime details. In one of the examined interviews, Int alternated five times (within a span of 4.5 minutes) between questions relevant to the details of the crime and general knowledge questions. During this time, Int asked a question about the crime episode ("What color was the gun?") followed by a general knowledge question ("Why do you think he shot X?") then back to the crime scene ("After he shot X, what happened?"), and a few questions later, back to general knowledge ("Is X married?"), back to the crime scene ("When this guy left your house, how did he leave?") and then a few questions later, a general knowledge question ("How much money did you have in your purse?"). While it is unlikely that questions

about the crime details will interfere with one's ability to answer general knowledge questions, it is likely that interspersing general knowledge questions in the middle of E/W's report of the crime will disrupt recollection of the crime. As a result, we recommend saving these general knowledge questions for the end of the interview, after E/W has completed his memory retrieval for details of the crime.

(3) Frequently Occurring Problem Techniques.

The following techniques are considerably less severe than those previously mentioned, however, we describe these as they do militate against effective E/W recollection. Furthermore, while these techniques did not appear in all of the interviews, they were not unique; they occurred in at least two of the eleven interviews monitored.

Negative phrasing. Half of the interviewers occasionally asked questions in the negative form (e.g., You don't remember whether ...?) instead of in the positive form (Do you remember whether ...?). The problem with negative wording is that it subtly implies that Int believes that E/W does not know the answer to the question, and therefore, discourages E/W from retrieving in a concentrated manner. Instead, it provides a convenient opportunity for an "I don't know" response. The simple solution is just to phrase

questions in the positive form.

Non-neutral wording. Similar to the wording problem above, several interviewers used non-neutral language to phrase questions (e.g., "Was he darkly complected?"), as if to confirm a specific hypothesis, rather than the more neutral language ("Can you describe his complexion?"). There are two problems associated with non-neutral language: first, there is a subtle implication that the suggested description is correct, which may tend to elicit an affirmative response; second, it has the potential to bias E/W's later recollection of the event (Loftus, 1979).

Inappropriate language. Frequently, interviewers used language that sounded overly formal (e.g., "Did you have occasion earlier today to witness ...?") highly stylized (e.g., "Calling your attention to the incident ..."), or beyond the intellectual capabilities of E/W (e.g., "So you were in a supine position?). The problem with these inappropriate forms of language is that they tend to create a psychological barrier between E/W and Int. This will be most debilitating in interviews with highly anxious E/Ws, where it is critical to develop a strong rapport so as to create a relaxed mood. Again, the simple solution is to speak in the language of E/W, avoiding jargon and highly stylized, memorized phrasing.

Staccato style of questioning. For all 11 interviews, the average amount of time between the end of E/W's response and the beginning of the next question was one second. With such a short time lag between answer and question it is unlikely that E/W will attempt to elaborate on an earlier response. E/W may possess more detailed information than is generated in the initial response to the question; however, if he is given little time to develop this additional information, it will surely not be elicited. Furthermore, as with other techniques mentioned, this rapid-fire questioning style may discourage E/W from developing an elaborated, extended answer later in the interview. The straightforward solution is to allow E/W more time to develop his answer and to wait a few seconds before asking the following question.

Distractions. Frequently, there were auditory or visual distractions during the interview: Someone walked into the vicinity of the interview, Int's radio was left on, etc. Obviously, some of these distractions are unavoidable, especially when the interview is conducted at E/W's residence, or on the street. However, at least some of them can be minimized. For example, Int can turn off his radio during the interview.

Judgmental comments. Occasionally, Int made a judgmental comment about E/W or the crime (e.g., "They

[previous investigators] thought it was funny that you had all your clothes on and X didn't have all his clothes on."). Such comments probably contribute little to the investigation other than perhaps to make E/W defensive. The obvious suggestion is just to remain non-judgmental, especially about matters that E/W may find offensive.

Lack of follow-up on potential leads. Many E/Ws described the crime episode or suspect both in objective terms ("He was 5' 10" tall) and in subjective terms ("He looked like a newspaperman"). When such interpretive (subjective) comments were made, there was usually little attempt to follow up and convert this subjective response into an objective description. In the above example, an appropriate follow-up question might be "What made you think he was a newspaperman?" In general, when interpretive comments are made, Int should attempt to use them as a springboard for gathering more objective descriptions.

Underemphasis of auditory cues. While each of the investigators elicited fairly complete descriptions of the visual characteristics of the crime (e.g., height, weight, facial characteristics, clothing) and of the actions that transpired, there was little attempt to extract auditory characteristics. Across the 11 interviews there were only two kinds of auditory

question ("Did he [the suspect] speak English?" and "Did he speak with an accent?") and these appeared in only four of the interviews. On listening to E/W's recounting of the crime scene, it was apparent that, frequently E/W had a clear auditory image of the suspect's voice, and that E/W could recall verbatim many of the words used. Nevertheless, there was little attempt to extract this potentially useful source of information. We suggest that interviewers make a stronger effort to collect auditory cues (e.g., accent, speech pattern, specific words, rate of speech, volume, speech defects, etc.), especially when E/W gives evidence of possessing a clear auditory image.

(4) Practical Constraints in Police Interviewing.

Although the preceding analysis has been highly critical of police interviews, we must realize that the real world of police investigation often does not afford the ideal conditions built into our laboratory studies. It may well be that it is impossible to do a perfect interview on the street. Generally, these practical limitations fall into one of three categories: the eyewitness, the logistics of the interview, and the investigative requirements. We shall examine these in turn and then explore means to circumvent some of these limitations.

The major limiting factor of most interviews is E/W himself. Frequently, E/W has such poor verbal skills as to be functionally uncommunicative, or he may be intoxicated at the time of the interview. Second, even if an articulate, sober E/W is available, he may be partially traumatized or certainly in a highly anxious state, especially if the interview is conducted shortly after the crime. Third, perhaps because of fear or because of the unpleasant feelings associated with the crime, E/W may be unwilling or afraid to "get involved."

A second limitation of the interview is caused by the logistics of the interview conditions. Most interviews are conducted either at the crime scene, shortly after the crime has occurred, or later at E/W's convenience. In any case, the interviewer has little control over many facets of the interview, e.g., the presence of other E/Ws, curious bystanders, amount of time available for the interview, or other police matters that Int must attend to.

Finally, several constraints are imposed by the investigative requirements of the police interview, all of which serve to deflect the interview away from E/W's memory. Since police investigators must file an official, written report of the crime, there is a tendency to gear the interview toward the structure and details of the report. Second, there is an implicit

requirement for the Int to take written notes; however, E/W's speech is likely to be too rapid to take notes effectively. As a result, Int may alter the interview somewhat in order to take more accurate notes. Third, E/W's narration may skirt around the essential ingredients of the crime--from the investigator's perspective--and Int will be tempted to alter the narration to get him "back on track." Fourth, the experienced investigator will likely have a partially developed hypothesis about the crime details before the interview has begun, or he will shortly develop a hypothesis at the very outset of the interview. Int may then bias the remainder of the interviewer to verifying his hypothesis. The general problem running through all of these examples is that whenever the interview is responsive to demands other than E/W's mental representation, recollection will suffer.

(5) Suggested Modifications

The following set of specific recommendations is based on our analyses of the taped interviews, the follow-up interview of detectives who participated in this study, and on official surveys of police training facilities in interviewing cooperative E/Ws. It is not intended as an exhaustive list, but rather, it focuses on the most immediate problems and remedies that are easiest to implement. A more complete, detailed guide to

interviewing techniques will be forthcoming.

Some of the recommendations have been suggested earlier in this report, either in the Conceptual Guidelines to Interviewing or in comments that accompanied the problematic techniques. The following suggestions, then, supplement those presented earlier.

Promote focused retrieval. Several simple techniques can be implemented to encourage more focused retrieval. The general strategy is to convey to E/W that his efforts determine the success of the interview. This can be effected most directly by letting E/W do most of the talking during the interview. That translates into asking fewer short-answer questions and more open-ended questions, allowing more time for E/W to develop his answer, and using pauses strategically, by letting E/W use that time to search through memory more thoroughly. If E/W's narration does not cover a vital piece of information, ask the appropriate short-answer question after the narration. Do not interrupt E/W in the middle of a description, even if it is to gather more information on a topic mentioned. Wait until E/W has finished his narration, and then, if necessary, refer back to his earlier description and search for the extra information. In general, allow for more time to conduct the interview. Finally, encourage E/W to report all of the details he can remember, even if they seem trivial.

Make questions compatible with E/W's mental representation. When listening to E/W's description, try to infer the mental picture he is using to mediate his response, and then ask follow-up questions that are relevant to this mental picture. This will require more attentive listening to E/W's responses, and less reliance on pre-interview knowledge. This strategy may be difficult for experienced interviewers to implement, as it is natural to make use of one's professional experience; however, the interviewer should train himself to listen more actively and respond accordingly. It is probably best for Int to approach each interview as if this were his first source of information about the crime, even if he has prior information.

Minimize distractions. Try to conduct the interview in a secluded place. Shut off the radio and eliminate any other sources of distraction.

Induce E/W to speak slowly. Since rapid E/W narration generates several problems--difficult note-taking, impoverished memory retrieval--induce E/W to speak slowly. The interviewer can make a straightforward suggestion that E/W speak slowly, as Int is actively listening and trying to take detailed notes. Second, Int can induce E/W to speak slower if Int himself speaks slowly and deliberately (Webb, in Siegman & Pope, 1972).

Tailor language to individual E/W. Avoid formal and highly stylistic, pre-memorized language patterns. Try to use as simple language as possible, especially if E/W is uneducated.

Follow up on interpretive comments. Interpretive, subjective comments may not hold up in court; however, they may be useful in accessing E/W's memory. When E/W makes an interpretive, subjective response, follow up on it by asking what external events or characteristics led him to that subjective response.

Reduce E/W anxiety. Because of the nature of the situation, and because the interviewer is a formal authority figure, E/W is likely to be in a heightened state of anxiety. In order to search through memory effectively, it will first be necessary to control this anxiety. Make a concerted attempt at the very outset to establish personal rapport with E/W, and start the interview with innocuous questions. After having provided easily accessible information that is not anxiety-arousing, E/W is in a better mental framework to begin retrieving details of the crime.

Avoid judgmental and personal comments. Whenever possible, avoid negative judgmental comments, especially about E/W. If it is imperative from an investigative standpoint to ask personally revealing questions, explain the logic of the question.

Review E/W's description. At the end of the interview, Int should recapitulate the details of the crime to E/W. This serves a dual purpose. First, it permits Int to check on the accuracy of his notes. Second, it gives E/W another opportunity to retrieve additional information.

Recommendations

It is clear to us that a major change must be enacted at the institutional level, namely, to introduce formal training in the science of interviewing cooperative eyewitnesses. This should be done both at the entry level of the uniformed street police officer, and also as in-house training for the more experienced investigator. The current training, or lack thereof, invites too many missed opportunities for eyewitness information, a fragile, inaccessible commodity, at best. The psychology of memory is advanced enough to be able to contribute positively to effective police interviewing, and there is little reason for police investigators not to avail themselves of such information.

It is likely that such a training program could take the form of an intensive workshop, as opposed to a long-term course of study. While the presentation component of such a program could be kept to a short duration, the efficacy of the training program could

profit by extended feedback provided to the individual interviewers. In support of this idea, the consensus of the interviewers we spoke to felt that they profited from our analysis of their interviews; however, they also felt that a structured workshop would be valuable. More important, a recent study in our laboratory showed that when novice investigators used the proposed guidelines to interview eyewitnesses to a simulated crime, they were considerably more effective than experienced law enforcement investigators (Fisher et al., 1986).

Testing the Cognitive Interview

Our earlier studies had demonstrated that, although the cognitive interview was relatively effective, vis-a-vis standard police interviews, there was still a considerable amount of information that was not elicited. We therefore set out to refine the technique to make it more effective. Our initial refinements of the cognitive interview were based on carefully analyzing the interview protocols collected in the laboratory. There were characteristic differences between effective and ineffective interviewers. We therefore modeled good and poor interviewers, building in those attributes of good interviewers and deleting those faults characteristic of poor interviewers. One typical difference is that effective interviewers asked more open-ended questions and allowed the witness to

control the flow of information. By contrast, ineffective interviewers asked more direct, short-answer questions and gave themselves a more central role in the interview.

To increase the scope of our observations, we also examined police interviews conducted in the field as outlined above. The most striking features of the interviews were that (1) there was very little uniformity in the structure; (2) most of the questions about pertinent crime facts were asked in a very direct fashion (for example, "Was he wearing jeans?"), often eliciting brief responses, either confirming the interviewer's intuition, contradicting it, or indicating that the eyewitness did not know; and (3) little or no assistance was given to enhance the eyewitness's recollection. Several idiosyncratic errors were also noted, often reflecting poor wording or presentation style (see the above discussion for a more detailed analysis).

After analyzing the laboratory and field interviews, we revised the original cognitive interview. The revised Cognitive Interview includes four basic principles: memory-event similarity, focussed retrieval, extensive retrieval, and witness-compatible questioning. The following is a brief description of the core principles (see Fisher, 1987).

Event-Interview Similarity:

This principle is identical to the "reconstruct the environment" principle of the original cognitive interview. Memory of an event, such as a crime, is enhanced when the psychological environment at the interview is similar to the environment at the original crime. The interviewer, therefore, should try to reinstate in the witness's mind the external (e.g., weather), emotional (e.g., feelings of fear), and cognitive (e.g., relevant thoughts) features that were experienced at the time that the crime occurred. The witness need not be placed physically back in the same environment; mentally recreating the environment is sufficient.

Focussed Retrieval:

Memory retrieval, like other mental acts, requires concentrated effort. One of the interviewer's roles, then, is to assist the witness to focus his concentration. Any disruptions of the retrieval process, such as physical disturbances or interrupting the witness's narration, will impair performance. Frequently witnesses will not attempt to search memory in a concentrated manner, because of the additional mental "work" involved. In those instances, the effective interviewer must encourage the witness to make the extra effort.

Extensive Retrieval:

In general, the more attempts the witness makes to retrieve a particular episode, the more information will be recalled. Witnesses should therefore be encouraged to conduct as many retrieval attempts as possible. Many witnesses will terminate their retrieval attempts after the first unsuccessful effort. This is particularly problematic for older witnesses. It is important, therefore, for the interviewer to encourage witnesses to continue trying to retrieve, even if they claim to not know a particular detail. Often, memories that seem to be unrecallable can be recalled after continued retrieval attempts.

Witness-Compatible Questioning:

Information about an event will be stored and organized uniquely for each witness. Successful retrieval of that event will depend, in part, on how compatible the question is to the form in which that witness has organized the information. It is important, therefore, for the interviewer to tailor the interview to the mental representation of each witness. A uniform style of questioning, asked of all witnesses alike, will not effectively tap the idiosyncratic memories of each witness. It is more effective for the interviewer to be flexible and alter his or her interviewing style to meet the needs of each witness than to use a rigid, uniform

style of questioning and force the witness to adjust his or her mental representation to the interviewer's questioning. Try to place yourself in the witness's frame of mind and then ask questions that are relevant to that perspective.

Techniques for Implementing the Refinements.

The following specific techniques are recommended to effect the principles mentioned above.

Reinstate Context:

Before beginning the fact-collection portion of your interview, ask the respondent to think about the environmental context at the time of the event in question. Ask also about what feelings the respondent had at the time and what thoughts were going through his or her mind. Alternatively, you may ask the respondent to describe these features to you, as the act of describing the features will serve to reinstate them mentally. Start out with a more global approach (what the day, in general, was like) and proceed to the more specific episode (e.g., during the robbery).

Focussed Retrieval:

Encourage the respondent to provide extended, detailed answers. Suggest that it may require extensive mental concentration to search for a specific memory, but that the effort is worthwhile.

Do not interrupt the respondent in the middle of a narrative response. If you wish to pursue something the respondent has mentioned, make a (mental or physical) note of the item and then follow up on it after the respondent has terminated the narration. Interruptions force the respondent to concentrate on an external signal (your question) and prevent him or her from concentrating fully on the appropriate memory image. After several interruptions, the respondent may also come to expect interruptions as part of the interview format. As a consequence, the respondent will foreshorten his or her responses to fit them into the expected allotted time per answer. That is, if the respondent is typically interrupted within 5 seconds of an extended answer, he or she will plan to generate future answers that can be completed within the allotted 5 seconds. Needless to say, foreshortened answers omit the kinds of detail upon which cases are built. The same negative consequences hold true for physical interruptions (e.g., telephone ringing).

Avoid asking several direct, short-answer questions (e.g., What color was his shirt?), as they typically induce the respondent to search through memory superficially. Instead, ask more open-ended questions (e.g., How was he dressed?), which elicit more extended answers. Specific information that is not addressed by

the respondent's narration to an open-ended question can then be probed by direct, short-answer questions.

Extensive Retrieval:

Allow for extended periods of silence (e.g., 5 seconds) after the respondent has terminated a narrative answer before asking the next question. Silence conveys the impression that you expect the respondent to give a more complete response, which will induce the respondent to search through memory more extensively. By contrast, questions that follow immediately after the preceding response convey that the interviewer is satisfied with unelaborated responses and also that the interviewer is in a rush--and therefore so should the respondent--to complete the interview.

Any subtle cues that discourage extensive retrieval (for example, asking questions in the negative form, e.g., "You don't remember the license tag number?" or prefacing the interview with a comment that it will take "only a few minutes") will decrease recall.

When asking a witness to retrieve an event for the second time, it is best to alter the wording of the question, even if only minimally (e.g., substitute "weapon" for "gun") so that, on the surface, it appears to be a different question. If witnesses perceive that the same question is being asked repeatedly, they will terminate their retrieval efforts early. Asking the same

questions in the same way each time will also lead to the same answers. For example, witnesses typically recall the details of an event in chronological order. Ask them afterward to recall some of the events in reverse order. (This has the additional benefit of disrupting attempts to fabricate answers.) Also, encourage the witness to adopt a different perspective after failing to recall an event. This technique, of adopting a novel perspective, is recommended only for mature witnesses, as young children are egocentric and have difficulty altering their perspective (Geiselman & Padilla, 1987).

Witness-Compatible Questioning:

Witnesses will often answer questions based on internal mental pictures they have of the event. Try to determine which mental picture the witness is currently using and then ask follow-up questions that are relevant to that particular mental picture. Ideally, contiguous questions should relate to the same mental picture. When questions are presented out of order, forcing the witness to alternate from one mental picture to another (e.g., a question about the suspect's face, followed by a question about his voice, and then back to the face), the witness must bring to consciousness a different mental picture for each question, an act that requires additional mental effort. After several of these alternating-image questions, witnesses may draw

into consciousness a less detailed picture, as that requires less effort. Ideally, the interviewer should encourage the witness to develop a detailed mental picture and then ask all of the questions that are relevant to that specific image, exhausting it of its information, before switching to a new mental picture (Fisher & Price-Roush, 1987). One implication of this strategy is that the interview should be highly interactive. The order of questions should be determined primarily by the witness's current mental state, which can be inferred only from his or her responses. Too often, all witnesses are questioned in the same, uniform sequence.

Specific Techniques:

A variety of mnemonics can be used to assist retrieving specific pieces of information (e.g., names, numbers, etc.). The primary ingredient in most of these mnemonics is to focus on partial information, when the whole response is unavailable. For example, if the witness cannot remember a particular name, then ask questions about specific, salient features of the name, like ethnicity, frequency (common or unusual?), length, number of syllables, stress pattern of syllables. For number sequences, encourage the person to think about whether there were any repeated numbers within the sequence, were there substrings of ascending or

descending numbers, were the numbers mostly odd or even. If the numbers were presented visually, ask whether the numbers were made up of straight lines (e.g., 7,4,1) or circular shapes (0,8,3). The same general technique, of probing for partial information, can be applied to a variety of other memories: e.g. clothing (style?, color-coordinated? neat-sloppy?), physical appearance (refined-rough?, pleasant-unpleasant? trustworthy-deceitful?...), etc.

When using these specific mnemonics, keep in mind that the general principles mentioned earlier still hold. It is still important to reinstate the context of a particular event, to encourage extensive and focussed retrieval, and to present the mnemonics in a form compatible with the witness's unique knowledge of the event.

In addition to the core principles mentioned above, the revised cognitive interview contains several principles of communication and the psychology of interactive, small groups. These principles are intended to (a) facilitate the witness's converting a conscious recollection into a complete, intelligible response, (b) facilitate the interviewer's comprehension of the witness's response, and most important, (c) assist the interviewer to understand the psychological needs of the witness, and also, to convey the interviewer's

investigative needs to the witness.

Finally, a temporal sequence was suggested to indicate the subgoals of the beginning, middle, and end of the interview. This last development of the cognitive interview is too detailed to describe here, but let us summarize the major point. In essence, the interviewer's goal is to infer the respondent's mental representation of the event, and then structure the interview so as to be compatible with that representation. In capsule form, we divide the interview into five segments. The Introduction is used to establish rapport between the interviewer and witness and to convey to the witness the appropriate psychological principles of memory. In the second stage, the interviewer encourages the witness to give an uninterrupted narration of the crime scene. This stage is intended more as a planning phase--for the interviewer to plan the strategy for the remainder of the interview--than as an information-collection phase. The middle of the interview is the information-gathering stage, when the interviewer guides the witness through various information-rich mental images of the event. After probing these mental images, the interviewer should review the witness's recollections. The interview is terminated formally, but with a suggestion that prolongs its functional life.

Experimental Tests

Two experiments were conducted to examine the revised cognitive interview. The first experiment was a laboratory study comparing the revised cognitive interview and the original version (Fisher et al. 1987b). The second experiment was a field study using actual victims of crime to compare the interviewing effectiveness of police detectives trained to use the Cognitive Interview with untrained detectives (Fisher, Geiselman, & Amador, 1988).

Laboratory Test of the Revised Cognitive Interview

Since the purpose of the present study was to improve upon the original Cognitive Interview, we compared only the revised version of the Cognitive Interview with the original version. We did not include a standard police interview condition, since we have found reliably in previous studies that it is less effective than the Cognitive Interview. Three memory-performance dependent variables were examined: number of correct statements, incorrect statements, and confabulations. In addition, we examined time per interview, as it covaries with interview condition.

Interview Conditions. The instructions to conduct the Original Cognitive Interview were similar to those provided to the interviewers in previous studies (see Geiselman et al. 1985, for a more detailed description).

Briefly, the interviewers were instructed to describe to the eyewitnesses at the beginning of the session four general memory-retrieval techniques. (a) Reinstate the environmental and psychological contexts of the original event; (b) Report everything. Do not edit anything out of your report, even things you may consider trivial; (c) Recall the events in different orders, both forward and backward; (d) Try to recall the incident from different perspectives, both from your own perspective and from that of prominent characters in the scene.

The instructions for the Revised Cognitive Interview were much more extensive, and are described in the previous section. As a brief summary, the main points included, in addition to the four general principles of the Original Cognitive Interview, tailoring the interview to be compatible with the eyewitness' mental operations, and facilitating the eyewitness' using focussed retrieval. Several specific instructions were also provided (e.g., developing the eyewitness'es subjective descriptions into objective facts; using appropriate language and phrasing; noticing eye movements and different speech rates; etc). Finally, they were instructed to start with an open-ended narration, followed by a return to specific episodes, and ending with a recapitulation.

Subjects. The subjects (eyewitnesses) were 16 male and female undergraduate students at Florida International University (FIU), who participated for course credit. The subjects were assigned randomly to one of the two interview conditions, eight per condition.

Interviewers. There were three interviewers: two high school students and one undergraduate college student at FIU. None had received any formal training in investigative interviewing before the current study. Each interviewer interviewed five or six eyewitnesses, approximately half with the Original Cognitive Interview and half with the Revised interview.

Stimulus Event. The stimuli were two video-cassette recordings of the films we had used in previous studies (Geiselman et al. 1985). The original films are used by the Los Angeles Police Department as part of a computerized training process in which police officers are exposed to simulated, life- threatening situations. Each film presents an audiovisual scenario of a violent crime (a bank robbery or a liquor store holdup) and lasts approximately four minutes. The video cassettes were shown on a Panasonic NV-9300A (3/4-inch U-Matic) video cassette recorder and appeared on a 20-inch JVC color monitor. All of the interviews were audio tape recorded on standard cassette recorders.

Procedure. Each subject participated in two sessions. During the first session, groups of 2-5 subjects went to a small faculty office at FIU and saw one of the two videotaped crime scenes. The subjects were asked to refrain from discussing the events of the crime. Approximately 48 hours later, the subjects went to a different room (small classroom) to be interviewed. The subjects were interviewed individually by one of the three interviewers. The interviewers were not given any information, prior to the interview, about the crime depicted on the videotape. They were told only that the subject had seen a videotape of a crime two days ago. Each interviewer conducted one or two interviews every day. When two interviews were conducted on a single day, one was an Original and the other a Revised Cognitive Interview. Approximately half the time the Original interview was conducted first and the Revised second, and half the time in the opposite order.

Interviewer Training. In the first phase of training, the interviewers were instructed to use the original Cognitive Interview. They listened to sample Cognitive Interviews conducted by the best interviewers in our earlier studies (Geiselman et al. 1985). In addition, they received the same 30-minute training session given to police interviewers in the prior studies. Since the current interviewers were novices,

they practiced the original technique by conducting several interviews with friends and relatives. After each of these practice sessions, the interviewers received critical feedback on their performance. This first stage lasted approximately one month.

In the second phase, the research team thoroughly examined tape recorded field interviews to note effective and poor interviewing techniques. Following this, a master set of positive and negative suggestions was formalized, which the interviewers then studied. The interviewers received two learning sessions on the use of the revised technique and observed a sample interview session. Again, the interviewers practiced using the Revised Cognitive Interview by conducting several interviews with friends and relatives, and then received critical feedback on their performance. Finally, the interviewers conducted one last set of refresher interviews with both the original and revised methods until they felt comfortable with both techniques. This second phase lasted approximately 10 weeks. After completing both training phases, the experimental interviews were conducted, half with each interview method.

Results. As seen in Table 1, the Revised Cognitive Interview elicits 45% more correct information than does the Original Interview, $F(1,14)=7.60$, $p<.02$. By

comparison, there are no reliable differences between the two interviews for either number of incorrect statements, $F(1,14)<1$, or for number of confabulations, $F(1,14)<1$. The overall rate of incorrect responses found in the present study (.18) is consistent with error rates found in previous studies (Geiselman et al., 1984, 1985), as is the rate of confabulation (.03). In summary, the Revised Cognitive Interview generated considerably more correct information than does the Original, without increasing the error or confabulation rates.

Table 1. Performance Measures for Revised and Original Cognitive Interviews

	Revised	Original
Number correct	57.50	39.56
Number incorrect	12.00	9.38
Number confabulated	1.75	1.38
Question time (min.)	38.50	29.25
Number correct (adjusted for time covariate)	54.20	42.80

Some interviewers were more effective than others. The range of correct responses elicited by the interviewers varied from a low of 37.4 to a high of 55.9. However, all three interviewers were more successful when using the Revised than the Original interview. The

poorest interviewer elicited 25% more correct statements with the Revised than the Original interview, and the best interviewer 74% more.

It can be noted from Table 1 that it takes approximately 9 min longer to conduct the Revised Interview than the Original Interview. While this difference was not reliable, $F(1,14) = 2.34$, $p > .10$, perhaps the extra time to conduct the Revised Interview accounts for its greater effectiveness. To examine this possibility, we reanalyzed the data with questioning time as a covariate. As can be seen from the adjusted scores in Table 1, the Revised Interview still elicits more information than does the Original, although the effect is attenuated somewhat, $F(1,14) = 4.43$, $p < .06$.

The preceding analyses examined all of the crime-relevant statements, irrespective of their importance. Perhaps the Revised Interview simply elicits more trivial statements, information with no investigative value. If this were true, the Revised technique would not have any greater practical importance. To examine this possibility, we rescored the data for only the facts with the greatest investigative value. Twenty critical facts were isolated for the liquor store holdup and 25 for the bank robbery in the same manner as Geiselman et al. (1985). When the data are scored for these critical facts only, the same trends obtain as before: 49% more

correct information is elicited from the Revised (12.45) than the Original (8.33) Interview.

Discussion. The Revised Interview elicited 45% more correct information than did the Original Interview, which has been shown earlier to be about 30% more effective than the standard police interview. The additional information gathered with the Revised technique has investigative value and it does not come at the expense of increased error.

One potential difference with the Revised Interview is that it makes extensive cognitive demands on the interviewer. There are increased memory demands imposed by the attempt to minimize interruptions--the interviewer must store his current comment or question until a later time, when it is more appropriate. He must listen more attentively, in order to infer correctly the witness' organization of knowledge. The interviewer must be more flexible in order to make on-line decisions to restructure the interview, thereby abandoning any pre-established sequence of questioning. In return for this expenditure of cognitive effect is the expectation of significantly more witness information, which ultimately, is the bottom line of investigative interviewing.

Field Test of the Revised Cognitive Interview

Having demonstrated reliably in the laboratory that the cognitive interview can elicit more information than

a standard police interview, we entered the last, and ultimately the most important, phase of the research program, testing the Cognitive Interview in the field. Does the cognitive interview elicit more information when police detectives conduct interviews with real victims and witnesses of crime?

We again enlisted the assistance of the Metro-Dade Police Department to conduct the field research. Initially, 16 experienced detectives from the Robbery Division were selected for the study, all of whom tape recorded their next several interviews. In all, 79 interviews were recorded, primarily with victims of commercial robbery or purse-snatching. Based on these preliminary interviews and on recommendations of the detectives' commanding officer, two equivalent groups were formed. One group was trained on the cognitive interview. The second, untrained, group served as a control.

Training in the Cognitive Interview. The training was conducted in four 60-minute, group sessions, including lectures describing various components of the technique and demonstrations of good and poor interviewing techniques. The schedule of topics was:

Session 1: Overview & Principles of Cognition

Session 2: Specific Interviewing Techniques to Enhance Memory

Session 3: Enhancing Eyewitness-Interviewer Communication

Session 4: Temporal sequence of the cognitive interview

After the fourth session, the detectives tape recorded a "practice" interview in the field, and received individual feedback on the merits and shortcomings of their interviews. The individual feedback session is an integral component of the training, as many of the techniques explained in the lecture- demonstration sessions were not fully implemented until after the feedback session.

Because of the emergency nature of police work, changing schedules and assignments, and mandatory court appearances, only seven of the ten members of the Trained group completed the entire training program.

Post-training interviews. After the training phase, each of the seven trained and six untrained detectives tape recorded his next 2-7 interviews. In all, 47 interviews were recorded, 24 by the trained group, and 23 by the untrained group.

Analysis of Interviews . Eleven of the tape recorded interviews were transcribed by a team of research assistants at U.C.L.A. The transcribers were not told whether an interview was conducted by a trained or untrained detective. The only identifying marks on the cassette recording was the detective's name and the case number. The transcriptions included only relevant,

factual statements made by the eyewitness; none of the detective's questions were recorded on the transcript. A second group of research assistants counted the number of statements made by each eyewitness. Again, the scorers were blind to the training condition for each interview.

Results . he effectiveness of the cognitive interview can be examined in two ways: by comparing the number of facts elicited before and after training for each of the seven detectives who completed the entire training program, and by comparing the number of facts elicited by the trained versus untrained detectives. As Table 2 shows, the cognitive interview was found effective in both the before-after comparison (Table 2a) and in the trained-untrained groups comparison (Table 2b). As a group, the seven trained detectives elicited 47% more information after than before training. Of these seven, six elicited more information (65% to 173% more) after than before training. Only one detective did not do appreciably better after than before. Not coincidentally, an analysis of the post-training interviews showed that he was the only one of the seven detectives who did not follow the recommended procedures. Across the two groups, the trained detectives collected 63% more information than the untrained detectives. Prior to training, the two groups were equivalent.

Table 2a. Training Effectiveness: Before vs. After

	Before Training	After Training
Number of Facts Elicited	26.8	39.6

Table 2b. Training Effectiveness: Untrained vs. Trained

	Untrained	Trained
Number of Facts Elicited	24.2	39.6

Since the above analyses were conducted on only a limited number of cases (24 post-trained interviews), the possibility exists that these few cases were unrepresentative of the entire sample of cases. Perhaps the 24 post-trained cases involved crimes that occurred under better observing conditions, or perhaps these particular witnesses had unusually good verbal skills. While this seems unlikely, as no special instructions were given to the trained detectives when conducting post-trained interviews, we examined the possibility that these were particularly easy interviews to conduct. In each of the cases analyzed, the eyewitness was interviewed by a uniformed police officer before being

interviewed by the detective. Presumably, "easy interviews," cases involving witnesses with good verbal skills or good viewing conditions, should be apparent from the amount of information in the uniformed officer's initial interview. For example, in "easy" interviews, witnesses should generate more information for both the follow-up detective and the uniformed officer; by contrast, in "difficult" cases, witnesses should generate only minimal information in both the detective's and the uniformed officer's interviews. As an unbiased measure of the quality of the detective's interview, we scored the transcripts in terms of how much <u>additional</u> information the detective elicited compared to the uniformed officer. Each statement in the detective's interview was categorized as being either the same as found in the uniformed officer's report, containing new information (not described in the uniformed officer's report), or being different from that reported by the uniformed officer. In all, we examined 29 interviews conducted by detectives before training in the cognitive interview and 22 conducted by detectives after training. The results, which are shown in Table 3, mirror the analysis of total number of facts. Overall, more additional information was collected by detectives after training in the cognitive interview than before training. The difference between

pre- and post-trained interviews shows up only for New information collected, facts that the uniformed officer had not uncovered. There were no differences for the Same and Different information. Theoretically, the detective's role is to elicit additional information from that collected by the uniformed officer. Information that duplicates the uniformed officer's report (Same) provides no new insights for the police investigation, and Different information just casts doubt on the reliability of witness or investigation procedures. That the superiority of the post-trained group occurs only in the amount of New information collected testifies to its practical utility.

Table 3. Comparison of Pre- and Post-trained Detective's with Uniformed Officers' Reports

	Total	Same	Different	New
Before	35.48	12.76	1.45	21.27
After	49.82	13.68	1.68	34.45

As with the laboratory studies, we were concerned with not only the amount of information elicited by the Cognitive Interview, but also its accuracy. To what degree might the additional information elicited by the cognitive interview simply reflect lower accuracy? In previous laboratory studies, we found no differences in

the accuracy rates of the cognitive interview and standard police interviews. Approximately 82% of all the statements elicited were correct, in all conditions. In a field study, there are obviously no data on the accuracy of the various interviews, since we cannot determine exactly what transpired during the crime. To estimate accuracy, therefore, we examined corroboration rates, the degree to which elicited statements are corroborated by other reliable sources of information (e.g., other victims or witnesses to the crime). Of 24 interviews where corroborating information was available (16 by pre-trained and 8 by post-trained interviewers) there were 325 corroborable statements. Overall, the corroboration rates were extremely high (94%). More important, the corroboration rates were equivalent for the pre-trained (93.0%) and post-trained (94.5%) interviews. The similar corroboration rates for the cognitive interview and standard police interview duplicates the laboratory findings with accuracy rates, and again suggests that the added information elicited by the cognitive interview does not come at the expense of increasing incorrect information.

Conclusions

Historically, little training has been available for investigators on interviewing witnesses and victims, but our critiques of both laboratory and field interviews

indicate that current standard interview techniques can be improved considerably through training. The results of each of the studies reported here confirm that cognitive interviewing reliably enhances the completeness of a witness's recollection, and without increasing the number of incorrect or confabulated bits of information generated. Based on the examination of several interviews, a revision of the original Cognitive Interview was made, which was found further to enhance the quality of witness reports. The procedures are easy to learn and can be readily adopted in routine police interview procedures. In fact, the cognitive interview currently is in use as standard training at several police departments and at other law- enforcement agencies.

The effectiveness of the cognitive interview generalizes to a variety of populations. In previous work, the Cognitive Interview was found to be successful both with college-educated witnesses and also with those who had not attended college. The present research shows that the cognitive interview is effective both with adults and children as witnesses.

Most important, the cognitive interview was found to be successful in the field, both in comparison to standard detective interviews and with uniformed officer reports. As noted by Malpass and Devine (1980), "no

matter how well executed or elegant our studies are, they will be of questionable relevance at best without a knowledge of the differences between eyewitnessing in real situations compared with research situations." In the final analysis, in our field study, the "research situation" was the "real situation" and the Cognitive Interview increased eyewitness recollection.

References

Anderson, R.C. & Pichert, J.W. (1978). Recall of previously unrecallable information following a shift in perspective. Journal of Verbal Learning & Verbal Behavior. 17, 1-12.

Cayle, C.D. & Gallagher, C. (1987). Bridging the gap: Techniques for interviewing child victims of sexual assault. The Police Chief, April.

Fisher, R.P. (1987). Memory-enhancement techniques for interviewing cooperative witnesses. Florida Prosecutor, September.

Fisher, R.P., Geiselman, R.E., & Amador, M. (1988). Field testing of the cognitive interview. Unpublished manuscript.

Fisher, R.P., Geiselman, R.E., & Raymond, D.S. (1987a). Critical analysis of police interview techniques. Journal of Police Science and Administration, 15, 177-185.

Fisher, R.P., Geiselman, R.E., Raymond, D.S., Jurkevich, L.M. & Warhaftig, M.L. (1987b). Enhancing enhanced eyewitness memory: Refining the cognitive interview. Journal of Police Science and Administration, in press.

Fisher, R.P. & Price-Roush, J. (1986). The effect of question sequence and witness recall. Unpublished manuscript.

Flanagan, E.J. (1981). Interviewing and interrogation techniques. In J. Grau (Ed.) Criminal and civil investigation handbook. New York: McGraw-Hill.

Flavell, J.H. (1986). The development of children's knowledge about the appearance-reality distinction. American Psychologist, 41, 418-425.

Geiselman, R.E., Fisher, R.P., Hutton, L.A., Sullivan, S.J., Avetissian, I.V., & Prosk, A.L. (1984). Enhancement of eyewitness memory: An empirical evaluation of the cognitive interview. Journal of Police Science and Administration, 12, 130-138.

Geiselman, R.E., Fisher, R.P., MacKinnon, D.P., & Holland, H.L. (1985). Eyewitness memory enhancement in the police interview: Cognitive retrieval mnemonics versus hypnosis. Journal of Applied Psychology, 70, 401-412.

Geiselman, R.E., Fisher, R.P., MacKinnon, D.P., & Holland, H.L. (1986). Enhancement of eyewitness memory with the cognitive interview. American Journal of Psychology, 99, 385-401.

Geiselman, R.E. & Padilla, J. (1988). Interviewing child witnesses with the cognitive interview. Manuscript under review.

Johnson, W.A., et al. (1970). Divided attention: a vehicle for monitoring memory processes. Journal of Experimental Psychology. 83; 164-171.

Loftus, E.F. (1979). Eyewitness testimony. Cambridge, MA: Harvard University Press.

Orne, M.T., Soskis, D.A., Dinges, D.F., & Orne, E.C. (1984). Hypnotically induced testimony. In G.L. Wells & Loftus E.F. (Eds.) Eyewitness testimony : Psychological perspectives. New York: Cambridge University Press.

Reiser, M. (1976). Handbook of investigative hypnosis. Los Angeles: LEHI.

Smith, M. (1983). Hypnotic memory enhancement of witnesses: Does it work? Psychological Bulletin, 94,387-407.

Stone, A.R. & DeLuce, S.M. (1980). Investigating crimes. Boston: Houghton Mifflin Co.

Tulving, E. (1974). Cue-dependent forgetting. American Scientist, 76, 559-573.

Weston, P.B. & Wells, K.M. (1970). Criminal investigation, Englewood Cliffs: Prentice-Hall.

Yarmey, A.D. (1979). The psychology of eyewitness testimony. New York: Free Press.