

A REVIEW OF THE COGNITIVE INTERVIEW

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In this critique of the Cognitive Interview (CI), discussion is organized around four themes; (1) the effectiveness of various components of the CI, (2) the relationship between the CI and other interviewing methods such as the *Guided Memory Interview*, the *Standard Interview*, and the *Structured Interview*, (3) different measures of memory performance and (4) the effect of training quality on interviewer performance. We comment on some of the theoretical and methodological issues to be considered in CI research and the practical considerations relating to the use of the CI in the field.

A REVIEW OF THE COGNITIVE INTERVIEW

The other papers in this special issue have described the origins of the cognitive interview (CI) and provided us with an overview of current research findings on the efficacy of the CI procedure. Rather than discuss the development of the CI and its administration, the present paper will comment on some of the theoretical and methodological issues to be considered in CI research and the practical considerations relating to the use of the CI in the field. The manuscript is divided into four sections, in which we will discuss in turn (a) the various components of the CI, (b) the relationship between the CI and other interviewing methods such as the *Guided Memory Interview*, the *Standard Interview*, and the *Structured Interview*, (c) different measures of memory performance and (d) interviewer variables and the effect of training quality on interview performance.

Components of the Cognitive Interview

The CI represents the alliance of two fields of study. The original version drew heavily upon what psychologists know about the way

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in which we remember things. Revisions of the procedure focused more heavily on the practical considerations for managing a social interaction and this was led by a desire to improve communication in police interviews and alleviate some of the problems described above. Obviously the 'cognitive' and 'communication' components work in tandem, however for the purposes of describing the procedure as it has been most commonly depicted in the published literature, the 'cognitive' components of the procedure will be the focus of this review.

One of the most frequently used components of the CI is for the witness to mentally reconstruct the physical (external) and personal (internal) contexts which existed at the time of the crime. A recent study has shown that context reinstatement yields as much information as the full CI procedure (Milne, 1997). The interviewer can help witnesses recreate context by asking them to form an image or impression of the environmental aspects of the original scene (e.g. the location of objects in a room), to comment on their emotional reactions and feelings (surprise, anger, etc.) at the time, and to describe any sounds, smells and physical conditions (hot, humid, smoky, etc.) that were present. According to the encoding specificity principle (Tulving and Thomson, 1973), a cue will be effective in retrieving information in memory to the extent that it was specifically encoded with the to-be-remembered information. Thus, increasing the overlap between test context and the context of acquisition (i.e., contextual reinstatement) will ensure the operation of effective retrieval cues and maximize memory retrieval. There is substantial body of empirical research on context reinstatement and memory retrieval (see Malpass, 1996 for a recent review). While some studies show context facilitates retrieval, others using similar or identical methods report no positive effects. Many researchers have agonised about the transient effects of context reinstatement (Memon and Bruce, 1985; Bjork and Richardson-Klavehn, 1989; Eich, 1995). There is some evidence to suggest that context reinstatement is a technique that witnesses spontaneously use to remember events (Memon *et al.*, 1997c; Milne, 1997). Other explanations for the inconsistency in context effects are considered when context reinstatement in the CI is compared with other procedures.

A second technique is to ask the witness to report everything. This may well facilitate the recall of additional information, perhaps by shifting criteria for reporting information. For instance, witnesses are encouraged to report in full without screening out anything they consider to be irrelevant or for which they have only partial recall (Fisher and Geiselman, 1992). In addition to facilitating the recall of additional information, this technique may yield information that may

be valuable in putting together details from different witnesses to the same crime (see Memon and Bull, 1991). The third component is to ask for recall from a variety of perspectives. This technique tries to encourage the witnesses to place themselves in the shoes of the victim (if the witness is not a victim) or of another witness and to report what they saw or would have seen. The theoretical assumption is that a change in perspective forces a change in retrieval description thus allowing additional information to be recalled from the new perspective. This is compatible with several models of memory (e.g. Norman and Bobrow, 1978). Again the aim is to use multiple pathways to retrieval and to increase the amount of detail elicited. There are a number of concerns about the use of the change perspective instruction, in particular the possibility that it could lead to fabricated details and confuse the witness (Memon and Koehnken, 1992; Memon, Cronin, Eaves and Bull, 1996a). Police officers have tended not to use the change perspective instruction and some have expressed a concern about the possibility of misleading the witness with this instruction (see Kebbel and Wagstaff, 1996; Memon and Stevenage, 1996c). There is some recent evidence that when compared to the other CI techniques, the perspective instruction can produce as accurate information as the other CI techniques although it does not appear to increase the amount of information recalled any more than the other techniques (Milne, 1997).

The fourth component of the CI is the instruction to make retrieval attempts from different starting points. Witnesses usually feel they have to start at the beginning and are usually asked to do so. However the CI encourages extra focused and extensive retrieval by encouraging witnesses to recall in a variety of orders from the end, or from the middle or from the most memorable event. This technique, like the change perspective instruction, is assumed to change the retrieval description, resulting in the recall of additional details. Geiselman and Callot (1990) found that it was more effective to recall in forward order once followed by reverse order than to make two attempts to recall from the beginning. So far there is no evidence that this technique yields any more information than a second retrieval attempt when used in a cognitive interview (Memon, Wark, Bull and Koehnken, 1997a) although Milne (1997) has found the instruction to be of some benefit when applied with specific prompts.

Isolating the Effective Components of the CI

One way of pin-pointing how a procedure like the CI works is to experimentally isolate and test the effectiveness of each of the components

yet there have been only a couple of attempts to do this (see Milne, 1997 for a recent review). In a study using 5 and 8 year old children as witnesses, Memon, Cronin, Eaves and Bull (1996a Experiment 1) interviewed college students about a staged event using one of the 3 of the cognitive techniques described above: Context Reinstatement (CR), Change Perspective (CP) and Change Order (CO). As a control, a fourth group were merely instructed to "try harder." The control group was included in order to test the hypothesis that the increase in recall with the CI may be a result of the additional retrieval attempts when each new instruction is applied. Reminiscence effects in which new details are elicited with each successive recall attempt are well established in the memory literature (Payne, 1987). The hypothesis was supported and there were no significant differences in recall performance across CP, CR, CO and control groups. The results were replicated in a second study (Memon *et al.*, 1996a Experiment 2) using child witnesses aged 5–9 years. However it was noted that younger children had difficulty in using the cognitive techniques.

In a more recent study using children and adults as witnesses to a filmed event, Milne (1997) extended the studies conducted by Memon *et al.* (1996a). She compared the full CI procedure with each of the cognitive techniques including the "report everything" (RE) instruction. Milne (1997) also included a control group who were merely asked to make a second retrieval attempt. The analyses undertaken by Milne were extensive, she looked at performance of witnesses at each stage of the interview: free recall, questioning and third retrieval attempt for various types of details: person, action, object and surrounding. Briefly she found no differences in number of correct or incorrect details across the four cognitive conditions (CP, CO, CR and RE) and the control condition thus replicating Memon *et al.* (1996a). Milne (1997) did however find that the full CI condition elicited more recall than the other single technique conditions except the CR condition. As indicated earlier this leads us to conclude that context reinstatement is the most effective component of the CI.

The Enhanced CI

The enhanced version of the CI (Fisher and Geiselman, 1992) makes it even more difficult to tease apart the various components and to determine which elements of the procedure are most effective. The enhanced version combines the four cognitive techniques with some strategies for improving interviewer–witness communication and flow of information in the interview. Several techniques are used to

facilitate the communication including the 'transfer of control' of the interview from the interviewer to the witness. This technique is put into place during the rapport-building phase in several ways. For instance through the use of open questions which request an elaborated response from the witness (thereby allowing the witness to do most of the talking), by not interrupting witnesses, by timing questions carefully so that they are related to witnesses' retrieval patterns and not to a protocol that an interviewer may be using. For example, if a witness is describing a suspect's face, an appropriate question would be to ask about eye colour rather than to ask about the suspect's shoes. During the course of training student and police interviewers on the CI techniques, the first author has noted that the various elements of the CI work interactively. Consider, for example, building rapport with the witness. If this is done appropriately, the witness will be more relaxed and open to using the various cognitive techniques. By not interrupting a witness and pausing after questions, the interviewer can facilitate contextual reinstatement. The suggestion is, therefore, that the effectiveness of the CI is due to improved communication, improved access/retrieval of information as well as the interaction of these factors (see McCauley and Fisher, 1995).

Further refinements of the CI (Fisher and Geiselman, 1992) also include additional cognitive techniques' for activating and probing a witness' mental image of the various parts of an event, such as a suspect's face, clothing, objects, etc. A distinction is drawn between conceptual image codes (an image stored as a concept or dictionary definition) and pictorial codes (the mental representation of an image, Paivio, 1971). The instructions to form an image are used in conjunction with the context reinstatement technique during the questioning phase of the interview (see Memon *et al.*, 1997a). When contextual reinstatement is accompanied by instructions to image and the images are probed with questions, further details (correct and incorrect) are elicited (Bekerian and Dennett, 1997; Memon *et al.*, 1997a). The effects of imagery on the retrieval of information depends on a number of factors such as reality monitoring (Johnson, Hashtroudi and Lindsay, 1993), task demands (Foley, Durso, Wilder and Freidman, 1991) and the ease with which an image may come to mind (Sherman, Cialdini, Schwartzman and Reynolds, 1985).

Some work by Marcia Johnson and her colleagues (see Johnson *et al.*, 1993, for a review) suggests that imaging could potentially be problematic to accurate memory performance (see also Roberts, 1996). For example, Johnson, Raye, Wang and Taylor (1979) found that participants who imagined a picture repeatedly were more likely to report

falsely that they had actually seen the picture. Further research has demonstrated that reality monitoring is affected by the characteristics of imagined events that are rehearsed. For example, Suengas and Johnson (1988) found that participants who later thought about apperceptive characteristics of imagined events (e.g., what the event made them feel like or think about), became more likely to confuse these imagined events with experienced events. In other words, rehearsing thoughts and feelings associated with an event that was only imagined made that event seem more like it really happened. Further source monitoring problems could arise if there is repeated imaging because the interviewee may start to confuse the original witnessed event with subsequent images created during the course of the CI (Roberts, 1996). Finally, imaging should not be accompanied by interviewer suggestion because of the danger of creating false memories.

Some of these source confusions may be offset at the decision stage. The detailed probing and care taken by a good interviewer is likely to cause the interviewee to adopt strict source monitoring criteria (i.e., be very careful about assigning source to a given memory), which has been shown to reduce errors (e.g., Lindsay and Johnson, 1989). It has been suggested that imagery instructions should be used with some caution until we have a better understanding of how they influence source monitoring and corresponding decision processes (Roberts, 1996).

In sum, contextual reinstatement, possibly accompanied with the cautious use of imagery that (a) limits the possibility of source monitoring confusions and (b) is nonsuggestive, seems to be the only effective cognitive technique employed with the CI. The instruction to change perspective or to recall in reverse order have not proven to be effective by themselves and may even introduce some problems. Research on these questions, however, is sparse and it is possible that the combination of all techniques has a synergistic effect on memory retrieval and/or monitoring. To determine this, it would be necessary to test every combination of techniques in a single experiment to discover which procedure(s), or combination of procedures, improve memory performance. An anonymous reviewer has suggested that it would also be helpful to compare the CI technique with a situation in which the interviewee is only asked to give a free recall.

Comparison Interviews

In attempts to evaluate the efficacy of the CI, it has been compared with other interview procedures such as the typical police interview (standard interview), the Guided Memory Interview (Memon and

Bull, 1991), the Structured Interview (see Koehnken, Thurer and Zorberbier, 1994; Memon *et al.*, 1996b, 1997a,b), and hypnosis (Geiselman, Fisher, MacKinnon and Holland, 1985; DasGupta, Juza, White and Maloney, 1995). We will not focus on hypnosis here given the lack of clear evidence that it can facilitate recall (e.g., Dinges *et al.*, 1992), the controversy surrounding the use of hypnosis (Pinizzotto, 1989) and the ambiguity about exactly what techniques are used in a hypnosis interview. Instead we refer readers to a recent reviews by Fisher (1995) and DasGupta *et al.* (1995) where the cognitive interview is compared with hypnosis.

The standard interview

In early studies, results from using the CI were compared to results using the standard police interview. This was a sensible research strategy given that few other interview techniques were widely used when the CI was first introduced and because the standard interview was the most naturalistic comparison group. However, the term "standard interview" is somewhat of a misnomer given that such interviews are highly variable and are far from standardized. There are also a number of undesirable characteristics associated with the standard interview, such as rapid-fire questions and frequent interruptions (Fisher, Geiselman and Raymond, 1987; George, 1991). From the practical point of view, the CI offers a clear advantage over the standard interview as these undesirable elements are absent (Fisher and Geiselman, 1992; Memon and Bull, 1991). However, for the purposes of memory research, the disadvantage of the standard interview is that it differs from the CI in many ways and so does not provide a tight experimental control against which to measure the effectiveness of the cognitive techniques employed specifically with the CI. For example, there is no control over the effects of training and interviewer motivation. Any observed advantage of the CI over the standard interview may be attributable not to the cognitive techniques, but to the fact that CI interviewees are trained in the use of special techniques and additional time and attention is devoted to their interview style. Such added attention might mean that CI interviewees are more likely to be motivated to perform well in contrast to the standard interviewees who are not given any special training or attention. The situation is worsened by the fact that, as mentioned above, there are large individual differences in the interviewing styles of standard interviewers. Some interviewers are very skilled at eliciting information and use good techniques (such as open questions), while others are consistently, (see Bull and Cherryman, 1996).

The standard interview was a useful comparison group in the early days of research on the CI. The issue at first was simply to evaluate whether the CI, as a complete procedure, was any better than the interview procedure that was used by the majority of police officers at that time. However, research today is rightfully more specific; that is, it is focused more on determining the efficacy of particular techniques and procedures within the CI rather than the efficacy of the interview as a whole. Consequently, we recommend against using the standard interview as a comparison group to evaluate the efficacy of the CI, especially when the research is focused on determining the specific effects that CI techniques might have on memory.

Guided memory interview (GMI)

The GMI interview draws upon principles of contextual reinstatement as does the CI and by encouraging the witness to mentally reinstate contexts guides their memory. The role of the GMI in eyewitness identification was first studied by Malpass and Devine (1981). The authors staged an act of vandalism during a classroom demonstration and requested students who had witnessed the event to view a photo-lineup 5 months later. Some witnesses were administered a GMI, during which they were guided through each step of the incident and probed for a full description of the environment in which the incident took place and their emotional reactions to it. For instance, witnesses were asked to describe where they were seated, who they were with and to visualise how the room looked. Witnesses were encouraged to visualise each sequence of the event, to describe what had taken place and how they felt at the time. Witnesses were also asked to form an image of the perpetrator, describe his appearance and their impressions of him. Malpass and Devine found that recognition accuracy was enhanced with the GMI, relative to a simple instruction condition (i.e., a prompt with lineup instructions), without biasing the witnesses' recollections.

Techniques employed in the GMI resemble the context reinstatement and imagery components of the most recent version of CI (see Fisher and Geiselman, 1992). However, in contrast to Malpass and Devine's (1981) results using the GMI, previous research has indicated that the CI does not enhance eyewitness identification from lineups (e.g., Fisher *et al.*, 1990). One reason for the discrepancy between CI and GMI results may be that the components common to both interviews are only effective in increasing recognition accuracy when certain conditions are met. In this vein, it is worth noting that studies investigating the effect of the GMI on eyewitness identification employing somewhat different procedures have failed to replicate the memory

enhancement reported by Malpass and Devine. For instance, Memon (1985) did not probe her witnesses in as much detail as did Malpass and Devine (1981) and failed to find memory enhancement. Because both the CI and GMI require that the interviewer provide a great deal of guidance for the witness, interviewer variables are likely to be very important.

With regard to the contextual reinstatement component employed with both the GMI and the CI, a critical variable determining its effectiveness might be the delay between the incident and test. Malpass (1996) has pointed out that if the to-be remembered event is readily available and the witness has a clear, accurate memory for the "focal" element of the event (or the part of the event about which the interviewer is trying to elicit information), then additional contextual cues are not likely to be useful (Smith, 1988). However, if memory for the focal element is weak, as when the representation has faded with time, contextual reinstatement should be beneficial.

In sum, because the CI is made up of a number of different techniques (e.g., changed perspective, change order, report everything) as well as context reinstatement, the GMI may be a reasonable comparison group for determining whether the CI effects can be attributed to context reinstatement alone or whether a combination of cognitive techniques are responsible for the effects. However, there is more to the CI than the cognitive techniques, the enhanced CI relies on the ability of the interviewer to communicate effectively in an interview. Perhaps a more appropriate control would be a procedure that achieves good rapport with the witness without the use of any special mnemonic techniques.

The structured interview (SI)

Koehnken and colleagues (e.g., Koehnken *et al.*, 1994) first used the SI as a comparison interview in CI research. The techniques of the SI are not vastly different from interview procedures that are considered good practice according to the British Home Office Memorandum of Good Practice (1992). For example, SI interviewers are persuaded to build rapport with the witness, to allow the witnesses the opportunity to give narrative descriptions and to provide ample time for interviewees to respond. Additionally, the SI is non-interruptive, expansive, confidence building and fosters the use of good questioning techniques (e.g., active listening, use of open questions, appropriate non-verbal behaviour; Koehnken, 1995).

Many of these positive aspects of the SI are also present in the enhanced CI. Memon *et al.* (1997b) have noted that, with appropriate

training, both CI and SI interviewers can be effective. However, the SI and CI are different in that the cognitive techniques (e.g., contextual reinstatement) are only employed with the CI. Typically the amount of information elicited in a CI exceeds that which is elicited by interviewers trained in the SI, although both procedures produce comparable accuracy rates. One interpretation of this difference is that the cognitive techniques do not enhance retrieval per se, but rather adjust the interviewee's report criterion (for further discussion, see Higham and Roberts, 1996a and the "memory measures" section below). Because the sole difference between the CI and SI is the use of the cognitive techniques in the CI, the SI provides a reasonably good control group for determining the role of these techniques within the CI (Memon and Stevenage, 1996a,b; although see discussion under "isolating the effective components of the CI" above).

Measures of Memory

Although one of the strong points of the CI is its employment of well-established laboratory principles, researchers of CI effectiveness have not typically been as concerned with measures of performance as have their laboratory counterparts (although see Fisher, 1996 and Higham and Roberts, 1996a). In practically all studies, performance is measured in terms of the percentage of interview statements that are correct or the absolute number of correct and incorrect statements. What are the implications of limiting research to these measures? One potential problem is that it ignores the amount and the nature of unreported information, which is as important to determining the efficacy of any interview procedure as is the reported information. Consider, for example, the data from two interviewees (see Table 1), both of whom report 20 statements, 16 of which are correct. Both would have a percent correct score of 80%, or an absolute score of 16 correct and 4 incorrect statements, measures that have traditionally

Table 1 Interview performance of two hypothetical interviewees

<i>Report</i>	<i>Candidate responses</i>	
	<i>Correct</i>	<i>Incorrect</i>
Interviewee 1 (high discriminability)		
Yes	16	4
No	4	16
Interviewee 2 (low discriminability)		
Yes	16	4
No	16	4

been used to index interview performance. However, suppose further that, during the course of the interview, both interviewees rejected (withheld) 20 additional candidate statements (i.e., possible interview responses). However, for the first interviewee, 4 of these rejected statements would have been correct if reported, whereas for the second interviewee, 16 would have been correct. Clearly, in this example, the first interviewee has much better ability to discriminate between actual memories and other candidate responses despite the fact that the percent correct scores and absolute number of correct and incorrect statements for the two interviewees are identical. In fact, if signal detection analysis is applied to these hypothetical data, the first subject yields $d' = 1.68$, whereas the second interviewee yields $d' = 0$. In other words, the second interviewee is completely unable to distinguish between correct and incorrect memories and yet is correct 80% of the time! This example illustrates how measures of interview efficacy that have traditionally been employed in CI research are unable to capture important differences in the way memory operates.

Under most circumstances, of course, the amount and nature of unreported information is unavailable making traditional signal detection analysis impossible. (These values were fabricated in the example above.) Without this unreported information, it is impossible to determine hit and false alarm rates which are necessary to calculate measures of sensitivity and bias. However, there is a clear need for the incorporation of analogous ideas into measures of interview performance. One reason for this need is that the CI may affect an interviewee's report criterion. For example, the instruction to "report everything" may cause people to lower their response criterion and report more information than they might normally. Indeed, many studies indicate that overall output (amount of information reported) is greater for the CI than the SI (e.g., see Memon and Stevenage, 1996a for a review). Without appropriate methods and a framework to incorporate such criterion shifts into measures of interview performance, it is difficult to determine what the effects might be.

In a recent series of articles, Koriatic and Goldsmith (1994, 1996a,b, c,d) have presented a formal model that outlines the effect of retrieval, memory monitoring and output control on memory performance. According to the model, a person retrieves candidate answers from long-term memory in response to an input question (retrieval). The probability that the best candidate answer is correct is then assessed (monitoring), and this probability is then compared to a response criterion probability set by situational demands and payoff (control). If the assessed probability that the best candidate answer is correct is

greater than the response criterion, then the candidate answer is reported. If not, it is withheld (performance).

Koriat and Goldsmith's (1996a) model makes the important distinction between retrieval and metamemory issues such as memory monitoring. To illustrate why the distinction between monitoring and retrieval might be important, let us return to the two hypothetical interviewees described above. First, both interviewees have similar response criteria as both interviewees retrieved 40 candidate responses of which they reported 20. However, as previously explained, the first interviewee has much better discriminability than the second ($d' = 1.68$ versus $d' = 0$), despite equal percent correct and absolute number of correct and incorrect statements scores. How could it be that the second interviewee was able to achieve the same number and proportion of correct responses despite the fact that discrimination was so low? The reason is that the interviewee with low discriminability retrieved more candidate answers that were accurate memories (32/40) than did the other (20/40). That is, although the second interviewee had very poor ability to discriminate correct from incorrect candidates (poor monitoring), s/he had better retrieval than the first. Consequently, given constant bias, the second interviewee's performance was as good as the first interviewee's performance because of this base-rate difference in the proportion of correct candidate answers that were considered.

Koriat and Goldsmith's (1996a) model makes some clear predictions about the effect of shifts in response criterion on interview accuracy measures. In general, it predicts that as the response criterion becomes more conservative, accuracy should improve. In this vein, experiments are currently being conducted in the second author's laboratory investigating various methods of fine-tuning interview reports (e.g., see Higham and Roberts, 1996b). One such method is to apply the remember/know procedure that is currently receiving a great deal of attention in the memory literature (e.g., Gardiner and Java, 1993; Higham, in press; Tulving, 1985). In one series of studies, interviewees view a videotape of a murder and later are given a CI. However, during the second stage of the interview, when free narrative statements are probed for more detail, the interviewee is asked to respond whether they "remember" or "know" that a given event occurred. If it is indicated that a given event is "remembered," this signifies that some contextual information is also retrieved along with the event such that the person could be said to be consciously recollecting or "reliving" the event. Conversely, if the event is said to be "known," the person is indicating that it is believed the event occurred (perhaps

very confidently), but there is no conscious retrieval of contextual information. It is expected that analysis of just those statements receiving "remember" judgments will yield a higher percent correct relative to an analysis of all statements. Such a procedure would be fairly easy to instantiate in many interview settings, and may prove to be one method by which interviewers can differentiate between statements that have a very high probability of being correct and statements that might have been made because of the "report everything" instructions (although see Bekerian and Dennett, 1994). Other experiments are underway investigating the role of confidence ratings applied to CI statements and their effect on memory performance. Under many circumstances, high confidence is correlated with higher percent correct scores (e.g., Koriat and Goldsmith, 1996a), so it is expected that an analysis of only high confidence statements will provide a more reliable database than an analysis of all statements.

It is interesting to note that if accuracy is compared between the SI and the CI, output is generally greater for the CI, but there is no associated loss in accuracy (see Memon and Stevenage, 1996a, for a review). This finding runs counter to Koriat and Goldsmith's (1996a) model which predicts poorer accuracy performance with increased output (all other factors held constant). There are several possible reasons for this. One might be that the cognitive techniques employed specifically with the CI actually do improve retrieval, monitoring or both, relative to the SI, and so the loss of accuracy due to the criterion shift is compensated. That is, although the person is reporting more information, which under many circumstances will reduce accuracy performance, the cognitive techniques employed by the CI offset this loss of accuracy. Another possibility is that monitoring performance is completely lacking in both interviews, in which case criterion shifts will have no effect (see Koriat and Goldsmith, p. 497). (Note that this does not necessarily mean that the accuracy of either interview will be poor; recall that the hypothetical interviewee with no monitoring ability described above achieved 80% correct statements.) Various other possible scenarios exist, but the important point is that Koriat and Goldsmith's model allows researchers to make some formal predictions about CI performance, many of which are not obvious or intuitive, and these predictions can be tested to determine what effects, if any, the CI has on retrieval and memory monitoring. This would clearly be an advance over the reliance on solely percent correct and/or absolute number correct and incorrect statements of as indices of interview efficacy.

*Quality of Training*¹

A criticism of early studies of the CI was that the amount and quality of training that interviewers were given was not specified. Based on the description of the interview protocol, it seems that interviewers were merely provided with a set of instructions to follow and were not 'trained' in any depth (e.g., Geiselman *et al.*, 1985). In some studies, interviewers were required to read the CI instructions to the interviewees verbatim, thus possibly obviating the need to have properly trained interviewers. The original CI procedure was perhaps easier to communicate to witnesses than the enhanced version. It appears to be the case that the enhanced version places far greater demands on the interviewer. Post-interview discussion with the student interviewers in the various Memon studies yielded the following observations. The cognitive interviewers reported that they found the procedure more demanding and exhausting as compared to the structured interviewers. The fact that administering the CI demands more cognitive resources than the SI may have resulted in more interviewer errors with the CI in the Memon *et al.* (1997a,b) studies. Thus the quantity and quality of training of CI interviewers has become a critical issue (Fisher, 1995; Koehnken, 1995; Memon and Stevenage, 1996c).

The significance of interviewer training in the CI is illustrated by a study conducted by Memon *et al.* (1994). In this study, experienced police detectives received a relatively brief (4 hours in total) training session in the use of the CI. This training did not produce any significant increases (compared with a SI) in the amount of information elicited from witnesses about a staged event. Also, both the CI and SI interviewers administered poor police interviews in terms of the number and types of questions asked despite the training (Fisher *et al.*, 1987), although there was considerable variability among the 38 police officers in the study (see Memon *et al.*, 1994 for examples of good and poor CI/SI techniques).

It is likely that differences in the attitudes, motivation and prior experience of the interviewers play a big role in determining the kind of results obtained with the CI. Memon *et al.* (1994) found that the police showed considerable resistance to the training, failed to follow instructions and used poor questioning techniques in both the CI and SI. This resistance, however, may depend partly on who is doing the

¹ One of the most helpful publications with respect to training issues is a chapter by Guenter Koehnken (1995) in which he examines the role of verbal and nonverbal behaviour in creating an effective CI. Additionally, the Fisher and Geiselman (1992) text provides some useful training material.

training. Veteran police officers may be less likely to contest the training techniques of a superior officer on the force than an external researcher from a university setting. In this vein, the second author is currently conducting research in collaboration with the Royal Canadian Mounted Police (RCMP) in which the Staff Sergeant of the Serious Crimes Unit is conducting the training.

It would also be useful to establish baseline measures of interviewer performance prior to training. This could be used to make 'before' and 'after' comparisons (as in the Fisher *et al.*, 1989, field study). Pre-training measures may also establish how motivated and interested candidates are about embarking on a training programme (see Memon, Bull and Smith, 1995 for an extended discussion). The work of Memon *et al.* (1994) also suggests that unless they are provided with feedback on their interview methods, police officers will continue to slip into bad practice. Thus one solution to this problem is more extensive practice in the use of CI techniques. According to Koehnken (1995), when interviewers have achieved a level of expertise that allows them to conduct a CI without having to constantly check guidelines regarding interview procedure, the cognitive load on the interviewer is likely to be reduced, enabling the techniques to be used more efficiently. Geiselman and Fisher (1997), in a review of 10 years of research on cognitive interviewing, also stress the importance of providing feedback on interviewer's performance.

So what recommendations can we offer for training? First, the success of the CI depends upon adequate training of interviewers in the techniques described above. A two day training programme is strongly advised (Fisher, 1995; Koehnken, 1995). However, it is not immediately clear how much training is needed or to what extent interviewers need to understand the theoretical principles underlying the CI. Fisher *et al.* (1989) report benefits for police officers after four 60 minute sessions, while George (1991) reports a CI advantage for police officers in his study after a 2 day training session. Memon *et al.* (1994) trained officers over 4 hours and found this was insufficient to motivate officers to use the new techniques. Finally, Turtle (1995) has evaluated several one week training courses on the CI for Canadian police officers and found that training has relatively little effect on officers' tendency to apply the CI techniques.

Clearly, the effects of training are complex and depend not only on length of training, but on quality of training, the background of the interviewers, and on attitudes towards training and so forth. Perhaps decisions as to who should be trained should be governed by the resources that can be devoted to training. If some interviewers are better than others regardless of training, then there is no point

spending valuable time and resources training them. One strategy would be to direct training to a select group of officers. Fisher (1995) has suggested that police forces ought to guide candidates who have the potential to make good interviewers toward the role of investigative detective and poor interviewers toward other aspects of police work. Thus human resources may be employed more efficiently. However, the problem with this strategy is that it assumes poor interviewers won't benefit from training and that training individuals who are already good interviewers will make them even better interviewers.

Conclusion

Although the CI has emerged as one of the most exciting developments in the investigation of eyewitness memory in the last ten years, many questions remained unanswered. However, even if these questions can be answered, there is a clear need for research investigating the particular effects the CI has on memory. How do the various elements of the CI interview work? If there are effective components, which ones are they? One obvious issue that research needs to focus on is how the CI relates to other interviewing procedures and what would be a suitable control group. It has been noted that some techniques are used more frequently than others and interviewers differ in their ability to conduct a good interview. One way to reduce this variability is to avoid comparison interviews, such as the standard interview, that has no set protocol. The recent development of the SI, a procedure that follows a protocol that is considered good practice among trained interviewers, provides a more reasonable comparison group for the CI. However, as we have seen, even if research is limited to comparisons between interviews with established protocols, such as the CI and SI, the problem of interviewer variability is not alleviated. These are issues that need to be taken into consideration when training police officers. Solutions to some of these questions will improve our understanding of the conditions under which the CI procedure may be most useful as a forensic tool.

ACKNOWLEDGEMENT

The authors wish to thank Jennifer Gustar for comments on an earlier draft of this manuscript. Preparation of this article was supported, in part, by a Natural Science and Engineering Research Council of Canada research grant awarded to the second author. Correspondence concerning this article can be sent to Amina Memon, Department of

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