THE COGNITIVE INTERVIEW FOR SUSPECTS (CIS)

R. Edward Geiselman, Ph.D.

The investigative interview protocol known as the cognitive interview (CI) was modified for use with suspects to maximize the opportunity to detect deception. The CI for suspects (CIS) seeks to generate a large amount of information from a suspect while reserving any challenge to the subject's story until late in the interview. The CIS also contains two techniques for requesting information from the subject in an unexpected manner: making a drawing/sketch and re-telling the story in reverse chronological order. Trained interviewers conducted the CIS with participants who were instructed to describe a recent autobiographical event or a completely fabricated event. The interviewers rated the likelihood of the participant's truthfulness at each of six stages of the CIS protocol. The results showed that the interviewers were only slightly better than chance at assessing deception following the narrative stage, but increased accuracy systematically throughout the remainder of the CIS. This study provides an initial demonstration of the potential of the CIS for assessing the likelihood of deception during investigative interviews.

Information is the lifeblood of investigations and it is the ability of investigators to obtain useful and accurate information from witnesses that is most crucial. Yet full and accurate memory recall is difficult to achieve. The Cognitive Interview (CI) technique (1, 2) is a systematic approach to interviewing witnesses toward increasing the amount of relevant information obtained without compromising the rate of accuracy (3). The CI is based on scientifically derived principles of memory and communication theory as well as extensive analyses of law-enforcement interviews. The CI has been found in scientific studies to produce significantly more information than standard question and answer type interviews.

The CI as an information-gathering technique has been tested in approximately 100 laboratory tests, most of which were conducted in the United States, England, Germany or Australia. In these studies, volunteer witnesses (usually college students) observed either a live, innocuous event or a videotape of a simulated crime. Shortly thereafter (ranging from a few hours to several days), the witnesses were interviewed by a trained researcher—or in some cases by experienced police officers—who conducted either a CI or a control interview. The control interview was modeled after a typical police interview or after a generally accepted interview protocol such as the UK Memorandum of Good Practice. Across these studies, the CI typically elicited between 25%-40% more correct statements than did the control interview. The effect was extremely reliable: Of the 55 experiments examined in a meta-analysis conducted in 1999 (4), 53 experiments found that the CI elicited more information than did the comparison interview (median increase = 34%). Equally important, accuracy was just as high in the CI interviews as in the comparison interviews. A second meta-analysis with a larger sample of studies produced similar results in 2010 (5). The CI has been taught and adopted by several policing agencies and allied investigative agencies worldwide (2). Those agencies include: FBI, NTSB, Department of Homeland Security, Defense Intelli-

gence Agency, UK Home Office, Calgary Police Service, Singapore Police Force, ICAC (Hong Kong), as well as several mid-level police departments around the United States.

The general CI protocol was developed for use with victims and eyewitnesses but it also has been used with success to interview suspects in some celebrated real-world cases known to the author by way of reports from those directly involved. These success stories typically have involved either of two scenarios: a) the subject recalls and inadvertently reports details of the crime that only the perpetrator could have known or b) the subject recalls details that contradict details he previously reported to the police but that conform to an alternative police theory of the case. The CI is particularly suited for these kinds of revelations because the CI is a witness-centered approach that relies on open-ended questions and narrative responses. That is, the subject generates the information almost exclusively on his/her own rather than responding to leading, close-ended questions from the investigator.

Recent research about investigative interviewing in my laboratory has focused on potential suspects. This work was designed to examine a select group of indicators of deception and truthfulness from the existing literature toward identifying the more reliable subset of these indicators. As a practical application, McCormack et al. (6) reasoned that first responders might be able to rely on this limited set of indicators, in addition to behavioral cues, to assess the likelihood of deception in conversations with persons who have raised suspicion. In the research, participants were asked to generate narrative accounts of true autobiographical events and narrative accounts of confabulated autobiographical events. Immediately before generating these stories, the participants were informed that they would need to tell each story in reverse chronological order, beginning with the end of the story and working backward in time. The reverse-order technique was taken from the basic CI protocol and was used in this study to increase the cognitive load on the storyteller (7). Increasing cognitive load has been found to increase the likelihood that reliable indicators of deception will emerge (6, 7). The contents of the tape-recorded stories told in reverse order were examined for a select set of verbal and vocal indicators of deception and truthfulness. It was found that the confabulated stories most often were limited in contextual details and/or interactions with others, but contained spontaneous justifications for what was said. These bare-bones reports often were spoken in sentence fragments with frequent stops and starts at an uneven rate of speech. Gaze aversion, lip biting, and adaptors also were associated with the confabulated stories.

A series of follow-up studies (8) allowed for further quantification of true versus confabulated narratives toward generating a refined set of indicators for assessing the likelihood of deception. The major summary areas indicating deception were determined to be:

1) Something unnatural about the story—few details, ends abruptly, contradictions, lacking chronology, vague or illogical story line, and awkward use of terms.
2) Exaggerated behavior—smiling, shrugging, grooming, and rationalizations.

3) Unusual eye movements or contact—blinking, squinting, exaggerated movements, and looking down or around the room.

This triad of indicators, while only red-flags with limited diagnostic value, can be monitored throughout an investigative interview but especially during stages where the cognitive load would be expected to be greatest for the interviewee, such as during an unexpected request to tell the story backward or to draw a diagram/sketch of the story. Changes from baseline observed during rapport development could indicate deception.

Research has shown that even with some training, distinguishing truthful from deceptive oral narratives and exchanges based on indicators alone is not an easy task, with accuracy often just above chance (9). Interactive strategies for detecting possible deception have proven to be more reliable (10, 11). For purposes of the present research, the general CI protocol was merged with reliable findings from the research literature on detecting deception to produce the cognitive interview for suspects (CIS). The CIS allows for a non-judgmental approach to interviewing subjects in situations where it is not yet clear whether the subject will be honest or deceptive during the interview (12). The same principles that drive the memory-enhancement and communications aspects of the CI for cooperative victims and witnesses are at work in the CIS. The subject is induced to generate large amounts of information before any challenge is made. This allows for a greater opportunity to observe inconsistent statements as well as any verbal, vocal, and behavioral signs of deception and changes from baseline (the rapport stage) should they occur. This approach reduces the likelihood that the investigator will challenge the subject pre-maturely based on any confirmatory bias (13). The CIS also employs two techniques for asking for information in ways that are unanticipated by the subject, namely drawing/sketching the story and re-telling the story in reverse chronological order. These elements of the CIS provide an opportunity to observe the subject's performance under unexpected conditions and elevated levels of cognitive load.

The eight stages of the full CIS are as follows:

1. *Rapport/Introduction*. It is recommended that the interviewer should present him/herself as just another person, rather than as a superior person of authority, and show an interest in the subject as an individual (1). The interviewer should create rapport with the subject using casual conversation in a non-judgmental manner. This is to put the subject at ease such that the interview will be more productive. In this manner, the subject may come to like and even trust the interviewer while talking about shared interests, real or not (14). As the subject begins to talk truthfully about neutral topics, it may become more difficult later on for the subject to tell the false story without showing signs of deception. Prisoners who confessed during their police interviews reported that their interviewers had developed rapport with them whereas a dominating approach was met with resistance (15). So, disarm a potentially deceptive subject with a few minutes of conversation. In addition, the interviewer should observe the subject's general demeanor during this chat as a baseline. A change in demeanor later on could indicate deception.

2. *Narrative*. Research shows that the vast majority of persons put in a position of being deceptive choose to offer only the highlights of their story or a bare bones account (6, 8, 16). The typical justification for such an abbreviated narrative is that to be more elaborate would appear as an attempt to convince the interviewer, or to "sell" the story (16). In contrast, the elements of the original CI leading up to the request for the narrative raise the expectation that the subject will be detailed in the narrative. In fact, the subject is instructed precisely to tell the story in as much detail as possible, and to take as much time as needed to concentrate. The elements of the original CI leading up to the narrative include: transfer of control to the subject ("You were there, I was not, so I am relying on you for the information I need."); request for a detailed account; and reconstruction of the environmental and physical context that existed just prior to the beginning of the event in question. More information provides a greater opportunity to produce conflicting details and/or details that are incriminating or known to be false. The interviewer should use "extenders" and other prompts to keep the narrative going as long as possible ("Really… tell me more about that.").

3. *Drawing/Sketch*. The interviewer's request for an illustration of the story from the narrative stage is unexpected by the subject. Research shows that unexpected requests can trip up a liar (17, 18). The request for an illustration should be presented as a means to clarify the narrative for greater understanding by the interviewer as well as to give the subject another opportunity to recall additional information. Look for unusual difficulty in making the drawing/diagram as well as for inconsistencies and a lack of additional elaboration—liars tend to have greater difficulty, exhibit more inconsistencies, and produce little, if any, additional details compared with truthful subjects.

4. *Follow-up, Open-Ended Questions*. The follow-up, open-ended questions should be presented as information-gathering rather than as confrontational to maintain the momentum toward generating more information from the suspect. Liars typically answer these questions with minimal elaboration without offering much that is new (19). Look for changes in body language from the rapport stage as well as for the more reliable indicators of deception (leakage) as described above.

5. *Reverse-Order Technique*. When all of the scenes from the narrative have been exhausted with follow-up questioning, introduce the reverse-order technique as another means for possibly jogging the subject's memory for additional details. Research shows that deceptive persons have unusual difficulty telling their fabricated stories backward (6, 7). Recalling a story backward increases cognitive load, and the deceptive subject's cognitive resources already are being strained to the limit to maintain the consistency of the story. Because of the additional reduction in their cognitive resources, research shows that the more reliable indicators of deception as described above are more likely to appear (leakage). Look for these signs to be more apparent during the reverse-order task.

6. *Challenge*. At this point, the subject will be confronted about inconsistencies, incriminating statements, and/or external incriminating evidence. None of these elements should be addressed prior to this

point in the interview (11). Consistent with the original CI, the interviewer should remain soft-spoken, respectful, and use pauses effectively to maintain the focus on the subject. Given that rapport has been developed and the interview has been conducted in an information-gathering style using "teamwork," the interviewer should ask the subject to "help me explain this." The confrontation should be conducted in a "drip" (piece by piece) manner rather than in attempt to overwhelm the subject with all of the incriminating information at once (10). Research shows that the weakest evidence should be presented first. This procedure increases the likelihood for additional inconsistent statements because it does not allow for a comprehensive explanation from a liar at one time.

In response to a more direct challenge ("Is everything you have told me been the truth? I think you have been lying to me this entire time."), research shows that most truthful subjects will give a firm denial and then offer additional information in support of their truthfulness (8). In contrast, liars tend to deflect an answer with responses such as, "I'm sorry you don't believe me" or "Why would I lie?" In sum, truthful subjects tend to offer more information in response to a challenge whereas liars tend to offer little or no additional credible information.

7. *Review.* The interview summary should be framed as in the CI for witnesses, as an opportunity for the subject to correct any inaccuracies and to recall additional facts. With suspects, the interviewer should change a non-incriminating element of the subject's story to see if the subject spontaneously corrects the inaccuracy (20). Liars tend not to correct the inaccuracy, but rather quickly agree with the review, including the changed element of the story, in an attempt to end the interview as soon as possible.

8. *Closure.* If the subject has appeared truthful, thank them for their cooperation. If the subject has appeared deceptive, express that you feel disappointed and disrespected (exploiting the rapport stage). In the latter case, it is worth an attempt to explain to the subject that it would be better for him/her to tell the truth now rather than later.

The present experiment was designed to provide an initial evaluation of the first six stages of the CIS and to serve as a demonstration of the potential of the CIS for assessing deception. College student research assistants, trained in the CIS protocol, interviewed fellow students about particular life events. For some of the interviews, the storyteller was truthful about the life event, whereas for other interviews the storyteller was deceptive, fabricating the entire story. The trained interviewers were asked to judge the truthfulness of each storyteller at six stages of the CIS protocol—rapport, narrative, drawing, follow-up questions, reverse-order recall, and challenge. With this methodology, it was possible to assess the cumulative contributions of the stages of the CIS for assessing deception. The final two stages of the full CIS (review and closure) were not studied in this experiment.

METHOD

Participants

Twenty college and university students enrolled as undergraduates in Los Angeles County served as subjects for the interviews. They volunteered in exchange for cash payment for two hours service. Their average age was 19.5 years; 50% were female; and several ethnicities were represented (White, Hispanic, Pacific Islander, African American), as well as persons of mixed heritage. Four additional participants were compensated but were not included in the final data set because, contrary to instructions, they confessed about their deception during their interviews.

The participants who served as the interviewers were six undergraduate students who served as research assistants in exchange for cash payment. The interviewers were trained by the author to conduct the interview protocols as described below. Their average age was 20.9 years; 50% were female; 50% were White; 30% were Pacific Islanders; and 20% were of Middle-Eastern decent.

Materials and Preparation

The participants who served as the subjects for the interviews were required to select two life events as the topics for their interviews, one that actually occurred and one that would be fabricated. This was done at the initial meeting where a list of possible topics was provided and each participant was to select one life event that occurred within the past three months and one life event that has never happened even in part. The list of life events included: party, pet, trip, relationship, accident, purchase, anniversary, promotion, award, concert, and wedding. Which of the two selected life events would be the focus of their first interview was counterbalanced across participants.

The participants who served as the interviewers attended four training sessions conducted by the author. The instruction consisted of two hours of lecture about the CIS protocol and the summary indicators of deception using video examples, followed by two one-hour role-play exercises where the participants interviewed each other about one true event and one confabulated event. Feedback was provided on performance. A two-hour summary meeting of the group with discussion concluded the training. Each stage of the CIS was covered in the training in detail. A general template for asking the follow-up questions and the challenge questions was provided and discussed. In addition to the open-ended questions for elaboration of the narrative, the follow-up questions included questions about temporal context ("What else was going on in your life at the time?"), other persons ("Tell me about all the people who were there."), and emotional context ("How did this experience affect your life?"). In addition to questions about discrepancies, the sequence of challenge questions was, "Is there anything you would like to add?" "Has everything you have told me been the truth?" "I think you have been lying to me this entire time."

The interviewers were instructed to judge the storyteller in each interview on truthfulness at six stages of the interview. The points in the interviews for these judgments were: immediately following building

rapport, upon completion of the narrative, after the drawing, after the follow-up questioning, after the reverse-order procedure, and after the confrontation. They were told that they could change their mind from one stage to another. The interviewers also were required to rate their confidence in each of their judgments on a 4-point scale, and to record the elapsed time at each stage as they made their rating by checking a timer that was observable only to them.

Procedure

The interview subjects were told during the initial meeting that it would be the goal of the interviewer, during each interview, to decide whether or not the life event had truly occurred. They were told that their own goal was to tell about each life event in such a manner that the interviewer believed that it actually happened, whether in reality the event had actually happened or not. They were told to maintain this ruse throughout the interview to the very end.

Each interviewer conducted 12 interviews over the course of the entire experiment with the restrictions that no interview subject could be interviewed more than once and 50% of the interviews were with subjects who were being truthful. The interviewers were told that whether an interview subject in any given interview was truthful was completely random and they were not informed as to the total number of subject interviews. Upon completion of each interview, the interviewer was required to make notes concerning their decision for that subject—to record their thinking about what made them decide that the subject was truthful or deceptive.

At the conclusion of the entire study, all six interviewers attended a joint debriefing session where their observations about each stage of the CIS were discussed. Each interviewer reviewed the endnotes from his/her 12 interviews during this session.

Design

The data matrix formed a 2 (truthful, deceptive) x 6 (stage of the interview) x 6 (interviewer) array. The dependent variable was the truth rating as measured on an 8-point scale created by combining the truthful-deceptive judgment and 4-point confidence rating at each stage of the interview. As structured, the scale was anchored with "very likely truthful" (8) and "very likely deceptive" (1). In addition, qualitative data were collected during a joint debriefing of the interviewers where each stage of the CIS was discussed.

RESULTS

The data from four additional participants who served as interview subjects were not included in the analysis reported here because they confessed about their deception during the interviews. This was in violation of their instructions to maintain their honesty throughout the interview to the end. Two of these

participants confessed during the reverse-order stage of the CIS while the other two participants confessed during the challenge stage.

Table 1. Mean Truth Ratings (8-point scale): Interview Stage

Event	Rapport	Narrative	Drawing	Follow-up Qs	Reverse Order	Challenge	Mean
True	5.34	5.17	5.17	5.49	7.17	7.70	6.01
False	4.84	4.17	3.34	2.84	1.49	1.49	3.03

The mean truth ratings are presented in Table 1 as a function of historical truth of the life event (true, false) and stage of the interview. The 2 by 6 ANOVA produced a significant main effect of historical truth, $F (1, 5) = 19.36$, $p < .01$, with the truth ratings being higher for the true stories than the false stories. The interaction effect between historical truth and stage of the interview also was statistically significant, $F (5, 5) = 23.38$, $p < .001$, with the discrimination between true and false stories increasing systematically as the interviews progressed. The mean duration in minutes of each stage of the interviews is presented in Table 2 as a function of historical truth of the life event. The main effect of historical truth was not statistically significant (39.04 versus 38.60), $F (1, 5) = 2.23$, $p > .10$, but the interaction effect between historical truth and stage of the interview was significant, $F (5, 5) = 7.97$, $p < .05$. The narrative and follow-up questioning stages were each significantly longer for the true stories ($p < .05$), whereas the drawing and reverse-order stages were significantly longer for the false stories ($p < .05$).

Inspection of Table 1 indicates that the interviewers were able to detect a difference between would-be truthful versus would-be deceptive subjects after rapport development, but this difference was not reliable statistically ($p > .05$). Given that both of the mean ratings were numerically higher than the scale midpoint (4.50), these interviewers exhibited a slight "truth bias" following the rapport stage.

Following the narratives, the interviewers were somewhat better than chance at discriminating true from false stories but this difference also did not achieve statistical significance ($p < .05$). As predicted by past research, the narratives offered by the interview subjects when they were being truthful were significantly longer in duration than when they were being deceptive (7.97 min versus 5.76 min, $p < .05$).

Table 2. Mean Time Duration (Minutes): Interview Stage

Event	Rapport	Narrative	Drawing	Follow-up Qs	Reverse Order	Challenge	Total
True	6.08	7.97	6.24	7.76	7.75	3.24	39.04

| False | 6.32 | 5.76 | 8.95 | 5.47 | 8.81 | 3.29 | 38.60 |

Following the drawings, the interviewers showed a modest increase in detection accuracy for the false stories only, but the overall discrimination of true from false stories now was statistically reliable (p < .05). The drawing task improved the detection of deception by revealing some time-consuming difficulties (see Table 2) on the part of deceptive subjects. During the debriefing session at the conclusion of the study, the interviewers reported unanimously that the subjects whom they thought were being deceptive failed to include significant elements from their narratives in their drawings whereas truthful subjects tended to add a few new details in their drawings. Deceptive subjects frequently needed to start over with their drawings due to inconsistencies, and they tended to change and/or correct elements of their stories. Overall then, deceptive subjects required more time to complete their illustrations even though it was the truthful subjects who tended to add some new details during this stage.

Following the follow-up questioning, the discrimination of the true from false stories improved further through modest increases in detection accuracy for both true and false stories (p < .05). As predicted from past research, the follow-up questioning for the true stories was significantly longer than the follow-up questioning for the false stories (see Table 2).

Following the use of the reverse-order technique, detection accuracy improved substantially for both the true and false stories (p < .01). Thus, asking for the narrative in reverse order had significant diagnostic value beyond simply asking follow-up questions. Requiring the subject to tell the story backward improved the detection of deception by revealing time-consuming difficulties (see Table 2) on the part of deceptive subjects. During the debriefing session at the conclusion of the study, the interviewers reported that the subjects whom they thought were being deceptive tended to require prompts to keep them from making significant leaps backward in time and reverting to forward-order recall ("What happened *right* before that?").

Following the challenge stage, maximum discrimination accuracy was observed for both true and false stories, but the additional gain was achieved through greater accuracy for true stories only (p < .05). This is because, by the time of the challenge stage, most interviewers already had decided that most of the deceptive subjects were in fact deceptive (see Table 1). During the debriefing session at the conclusion of the study, all six interviewers agreed on the following differences between the subjects whom they believed to be truthful and the subjects they believed to be deceptive: When asked to clarify unresolved inconsistencies in their stories, truthful subjects most often offered explanations that involved miscommunication ("I wasn't clear before, let me explain...") whereas deceptive subjects most often offered explanations that involved claims of faulty memory ("I was mistaken before, it was this way…"). When asked if the subjects wanted to add anything, deceptive subjects tended to either say "No" quickly or they sim-

ply repeated elements from their narratives. In contrast, truthful subjects tended to either make elaborations or at least hesitate to search memory before saying "No." When challenged directly by the interviewers about having lied, deceptive subjects most often appeared unhappy and uncomfortable, and then offered weak denials or deflected the direct challenge ("I'm sorry to hear that."). In contrast, the truthful subjects were more likely to give a firm denial about not having lied. This difference was observed in the previous studies (8).

Finally, all six interviewers agreed that each of the three summary indicators of deception from the previous research (6, 8) were more apparent for the subjects whom they believed to be deceptive, especially during the drawing/sketch, reverse-order, and challenge stages: unnatural story elements (logic, chronology), exaggerated behaviors (grooming), and unusual eye movements (searching).

DISCUSSION

The present experiment was designed to provide an initial evaluation of the CIS as a promising interview protocol and to demonstrate the potential of the CIS for assessing the likelihood of deception. Consistent with past experiments, the initial base rate for detecting deception was just over chance following the narrative stage of the protocol. However, the remaining stages of the CIS resulted in a systematic increase in the interviewers' ability to discriminate true from false stories. The drawing/sketch stage improved judgment accuracy significantly for the false stories whereas the later challenge stage improved judgment accuracy significantly for the true stories. The follow-up questioning and the reverse-order stages improved judgment accuracy significantly for both the true and the false stories. Thus, maximum discrimination accuracy was achieved following completion of all of the first six stages of the CIS protocol. The ultimate level of discrimination was highly significant.

These results demonstrate that maximum discrimination of deceptive from truthful subjects can be achieved through a systematic application of several stages of good-practice interviewing procedures. While most of these practices have been studied previously in isolation, the CIS protocol combines them into a comprehensive set of procedures. As such, the CIS holds promise as an alternative methodology for conducting investigative interviews with suspects. The CI was developed to assist willing victims and witnesses of crime to maximize the amount of information obtained. When applied to suspects, the CI has the potential to generate large amounts of information that can be used to increase the opportunity to detect inconsistencies and other red-flag indicators. Deceptive persons must maintain the internal consistency of their false stories, and doing so requires cognitive resources. During the CIS, the interviewer further increases the subject's cognitive load through unexpected requests for drawings and reverse-order recall. With limited cognitive resources, the more reliable indicators of deception are likely to emerge as found in previous research (6, 7, 17). For each of these reasons, the stages of the CIS allowed the interviewers in the present experiment to systematically increase their discrimination of deceptive from truthful subjects.

As a word of caution, each element of the CIS, as well as the more reliable indicators of deception, can provide the interviewer with "red flags" or "hot spots" only. Detection of any one indicator of deception during the interview should not be taken as sufficient evidence to conclude that the subject is being deceptive. Instead, judgments about likely deception must be based on the overall pattern of performance throughout the entire CIS protocol. Consistent with some past research using college students (8), the interviewers in the present experiment tended to view most of the subjects initially as being likely to be truthful. It is encouraging that the interviewers were able to systematically discriminate the truthful from the deceptive subjects throughout the remaining stages of the protocol without retaining this "truth bias" and without creating an opposite "deception bias."

The present experiment has a number of limitations that can be addressed in future studies of the CIS. The interviewers and subjects were college students operating in a low-stakes environment. Skilled liars under high-stakes conditions would conceivably be more difficult to detect, and truthful persons under stress and/or sleep deprivation would conceivably exhibit some characteristics of liars. It is encouraging, however, that college students without investigative experience could be trained in six hours to learn and apply the CIS protocol with considerable accuracy. This outcome is especially encouraging given that the interviewers were not supplied with any external information about the subjects' stories in advance of the interviews. Such information conceivably could have been used to further facilitate the detection of deception during the challenge stage. Given that the results were observed under these limiting conditions, further research on the CIS certainly is warranted. A second limitation with the present experiment is that the design did not include a comparison procedure such as the Reid confrontation interrogation technique (21). Now that the CIS has shown promise as an alternative procedure, such comparisons in future experiments are warranted as well. Finally, there was no attempt to gain confessions from the deceptive subjects in this experiment (although four participants confessed anyway). Studies designed to gain confessions from known perpetrators using the CIS remain to be conducted.

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ABOUT THE AUTHOR

Dr. R. Edward Geiselman is a Professor of Psychology at UCLA where he has served on the faculty for 34 years. He has authored more than one hundred research papers and six books. Dr. Geiselman has participated in training law-enforcement professionals for 25 years and has testified in 330 criminal trials as an expert witness.