

Questioning the acceptability of the Cognitive Interview to improve its use

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ABSTRACT

Introduced in the middle of the 1980s, the cognitive interview intended to perfect the techniques of interviewing witnesses and victims of crimes and offences. Since then, numerous international researchers have found an interest in this technique. The major reason for its success within the scientific community is probably due to the scientific basis of its elaboration, referring to various models of memory. Among the potential users—mainly professionals of justice—its use is not systematic, even for those with extensive training. We can then question the adequacy of the cognitive interview in relation to the characteristics of a real forensic interview. First, we will present studies which have shown the utility of the cognitive interview while testing its reliability according to diverse characteristics of the situation of the interview, and according to the characteristics of witnesses. Then, we will question the costs and the compatibility of the cognitive interview with the various phases and objectives of an investigation. Moreover, we will question the usability of the cognitive interview, particularly its learnability, and then propose solutions to improve its usability. Finally, our conclusion will deal with the social acceptability of this interviewing technique by professionals.

Questionner l'acceptabilité de l'Entretien cognitif pour améliorer son utilisation

RÉSUMÉ

L'entretien cognitif est une méthode d'audition des témoins et victimes de crimes et délits qui permet d'obtenir des témoignages plus exhaustifs et aussi exacts que ceux

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obtenus à partir d'un questionnement classique de type questions/réponses. L'ancrage scientifique de son élaboration, faisant référence à plusieurs modèles du fonctionnement de la mémoire, est probablement la raison majeure de son succès auprès de la communauté scientifique. Du côté des utilisateurs potentiels, à savoir majoritairement des professionnels de la justice, son utilisation n'est pas systématique, même pour ceux qui ont été intensivement formés. Émerge alors la question de l'adéquation de l'entretien cognitif aux caractéristiques d'une audition réelle de terrain. Dans un premier temps, nous présenterons les études ayant montré l'utilité de l'entretien cognitif tout en testant sa fiabilité en fonction de diverses caractéristiques de la situation d'audition, et en fonction des caractéristiques des témoins. Ensuite, nous questionnerons les coûts et la compatibilité de l'entretien cognitif avec les différentes phases et les différents objectifs de l'enquête. Suite à cela, nous questionnerons l'utilisabilité de l'entretien cognitif, à travers son apprentissage, puis en présentant les solutions jusqu'alors proposées pour améliorer son utilisabilité. Enfin notre conclusion portera sur l'acceptabilité sociale de cette technique d'entretien par les professionnels de la justice.

In the middle of the 1980s, an interviewing method intended to perfect interviews of witnesses and victims of crimes and offences—the cognitive interview (Geiselman et al., 1984)—aroused the interest of numerous researchers on the international level. This method makes it possible to obtain testimonies that are richer in the amount of information obtained and as exact as testimonies made by using an interview usually concluded by investigators (Fisher, Geiselman, & Raymond, 1987; Fisher, Geiselman, Raymond, & Jurkevich, 1987; Ginet & Py, 2001). The major reason for its success within the scientific community very probably results from the scientific basis of its elaboration, which makes reference to several models of the functioning of the memory (Geiselman et al., 1984).

The Cognitive Interview (CI) consists of a set of instructions and attitudes aiming at taking into account cognitive, communicative and social processes involved during eyewitness¹ interviews (Fisher & Geiselman, 2010; Fisher & Geiselman, 1992; Geiselman, Fisher, MacKinnon, & Holland, 1986). “Cognitive” or “mnemonic” instructions, such as the mental reinstatement instruction, the report everything instruction, the change of order instruction, the change of perspective instruction (Geiselman et al., 1984), partially find their theoretical bases in the encoding specificity principle (Tulving & Thomson, 1973), and partially in the multicomponent view of a memory trace (e.g., Wickens, 1970). In addition, the authors of the method—Fisher and Geiselman—underlined the importance of phrasing questions that are compatible with the witness' mental record (viz., witness compatible questioning). In practice, the interviewer must adopt the “witness' vision” during the narration and adjust her/his

¹In this manuscript, the word “witness” will refer to both witness and victim.

follow-up questions and/or in-depth questions in function of these “mental records”. Furthermore, as giving a detailed description is an activity which requires numerous cognitive resources, Fisher and Geiselman (1992) recommend that the interviewer help the witness to maintain her/his concentration (e.g., choosing a quiet room; asking her/him explicitly and in an empathic manner to maintain her/his concentration high). In order to facilitate communication, non-directive attitudes—part of a set of “social” instructions—are also recommended. First, the interviewer must give the witness an active role in the memory retrieval exercise (viz., transfer of control). This is done by using instructions or questions generating free recalls and/or detailed answers (e.g., favoring open questions). She/he must also emphasize the relation established with the witness to encourage good cooperation (e.g., personalizing the interview, being empathic, never judging). Finally, additional social instructions aim at lowering the influence that the interviewer could have on the witness’ answers. For example, the interviewer must explicitly inform the witness that she/he has the right to say “I don’t know”, “I don’t understand”, “I don’t remember”, “You made a mistake”.

The CI has been and still is a research topic in many countries outside the United States, such as in Brazil (Stein & Memon, 2006), France (Py, Ginet, Desperies, & Cathey, 1997), Germany (Aschermann, Mantwill, & Köhnken, 1991), Italy (Bensi, Nori, Gambetti, & Giusberti, 2011), New Zealand (Westera, Kebbell, & Milne, 2011), Spain (Campos & Alonso-Quecuty, 1998), Sweden (Larsson, Granhag, & Spjut, 2003), the United Kingdom (Memon & Bull, 1991). Numerous independent replicated studies done in these countries unanimously showed the effectiveness of the CI in comparison to the interview usually used by investigators. Two meta-analyses confirmed the robustness of the CI to obtain testimonies characterized by a large amount of information and an accuracy rate² similar to the one obtained with other types of interviews (Köhnken, Milne, Memon, & Bull, 1999; Memon, Meissner, & Fraser, 2010). Depending on the studies, the CI is either compared to a “standard” interview, corresponding to an interview usually made by a police officer (Fisher, Geiselman, & Raymond, 1987), or compared to a “structured” interview, corresponding to an interview using the communication and social components of the CI, but omitting the cognitive components. For the adherents of this interviewing technique, the examples of scientific studies attesting to its usefulness are not lacking. Indeed, in a more

²The accuracy rate can be calculated in laboratory studies. It corresponds to the amount of correct information divided by the total amount of information recalled during the interview.

recent meta-analysis (Memon et al., 2010), 59 studies were recorded, and the authors excluded studies which had not been published in scientific journals with reviewing committees. However, these arguments are not sufficient to convince and encourage investigators to systematically use this interviewing technique. For example, in the United Kingdom, despite large efforts to train professionals of justice in the CI, they do not systematically use this technique; when they do use it, it is often incomplete (Clarke & Milne, 2001; Dando, Wilcock, & Milne, 2008, 2009). Thus, it makes sense to question the gap between the utility of the technique and its use by professionals.

We chose to question the use of the CI by referring to the model of acceptability of the system proposed by Nielsen (1993). In this model (see figure 1), behavior consisting of using a “new” specific technique³ is determined by its acceptability. According to Nielsen, the acceptability of a technique refers to both its practical acceptability and its social acceptability. Practical acceptability includes the concepts of usefulness (practical utility), cost, compatibility and reliability. Usefulness is defined by two components, utility (theoretical utility) and usability. Usability is defined by two components, utility (theoretical utility) and usability. Usability is defined by two components, utility (theoretical utility) and usability. Usability is defined by two components, utility (theoretical utility) and usability. Usability is defined by two components, utility (theoretical utility) and usability.

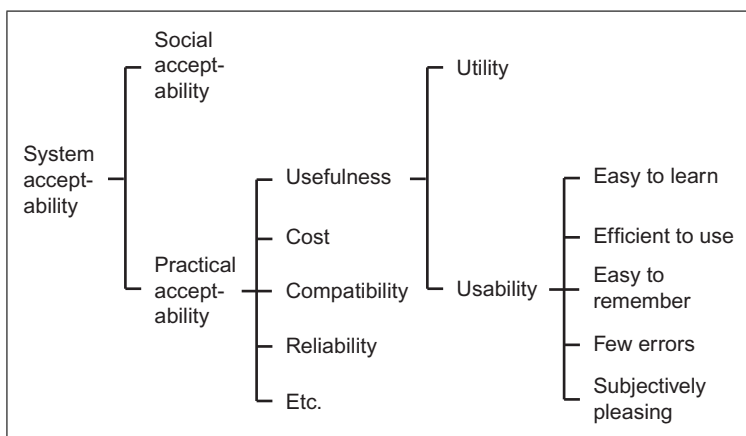


Figure 1. Nielsen’s model of system acceptability (1993).

proposes various indicators to measure usability: easy to learn, efficient to use, easy to remember, few errors and subjectively pleasing. Social

³The author refers to the term “system”, however, in order to facilitate the understanding of our argumentation, we chose to replace the term system with the term “technique”.

acceptability takes into account the attitudes and the social constraints leading the user to use a specific technique effectively.

In this perspective, we will see that the numerous studies carried out to date are essentially concentrated on advancing the utility of the CI. Other less voluminous but not insignificant studies have concerned the evaluation of its training. The other concepts presented in Nielsen's model have been the object of few studies, some have simply been mentioned or discussed. In the framework of Nielsen's model, we will propose new perspectives for reflection and research to enhance the use of the CI by professionals. In the first section, we present most of the studies showing the (theoretical) utility of the CI in function of the various characteristics of the interview setting, and still understudied research areas are identified. The second section examines how the concept of cost assessment has been taken into account, and develops reflection on the compatibility of the CI with the various phases of an investigation. The third section deals with studies referring to the usability of the CI by professionals, mainly through training assessments (viz., CI training). We then present the solutions proposed to date to enhance the usability of the CI by using the concepts of efficiency of use and memorization; and we offer other possible solutions. Finally, the social acceptability of the CI by professionals of justice is put into question.

1. UTILITY OF THE CI

1.1. Does the CI fit all types of crimes and offences?

Just after the publication of the first laboratory study aimed at testing the CI, Geiselman, Fisher, MacKinnon and Holland (1985) did a series of studies with various types of crimes. Indeed, it was essential that laboratory studies were as ecological as possible. Later, some research was carried out on the effectiveness of the CI in function of the level of emotion aroused by the event, the delay between the event and the disclosure, and the repetitive character of the crime. Some researchers also focused on the mental and physical state of the witness after a CI.

1.1.1. Types of events

The two meta-analyses of the CI (Köhnken et al., 1999; Memon et al., 2010) underlined the positive effect of the CI whatever the type of event—offence or crime (e.g., armed robbery or physical attack)—and whatever the type

of study, in the laboratory (i.e., with a fictitious event) or in the field (i.e., with a real event; e.g., Fisher, Geiselman, & Amador, 1989). Nevertheless, one major question remains without a clear answer, that of the role of emotion and its eventual interaction with the CI. In a criminal affair, the event experienced by the witness and/or the victim is often emotionally charged, and yet studies have shown that emotion affects memory recall (e.g., Houston, Clifford, Phillips, & Memon, 2012). Two studies in which the emotional variable was manipulated did not allow the authors to conclude that there is an interactional effect with the CI (Ginet & Verkamp, 2007; Py & Ginet, 2001). It is possible that the absence of effect of the emotional variable was due to a failure in the experimental manipulation. Py and Ginet (2001) manipulated the emotion of the target event by asking the participants to watch a neutral or a negative film, so that the witnesses had a passive role. The emotion felt by the witnesses while watching the negative film was probably not strong enough to interact with the CI. Ginet and Verkamp (2007) manipulated the level of emotion by using an external process coupled with the target event (viz., a film), by making the witness believe (or not in the control condition) that she/he would receive a low electric shock when watching the film. Manipulating the emotion of an event experimentally seems complicated on ecological and ethical levels. However, this type of study remains essential to answer a major question: is the CI effective when the witness experienced an emotionally charged event? It would then be interesting to study the interactional effect of the CI and the level of emotion with a real event involving numerous witnesses (e.g., accident, terrorist attack) and compare their testimonies with witnesses who observed the event on TV.

1.1.2. Long delay between the event and the interview

No study in a judicial context has examined the effect of a very long delay between the event and the interview. Memon et al. (2010) showed that only 3% of the studies included in the meta-analysis used a delay of more than two weeks, and that 48% of the studies used a delay between 24 and 72 hours. Nevertheless, in an epidemiological survey, the CI revealed to be an efficient tool for interviewing people about events they experienced many years earlier (Fisher, Falkner, Trevisian, & McCauley, 2000). In this survey, the participants were interviewed about the physical activities they did 35 years ago. Despite the fact that the CI lasted twice as long as a standard interview (viz., usual interview used for this type of epidemiological survey), twice as much relevant information was obtained with the CI (viz., answers to the question asked as opposed to off topic answers). According to Fisher et al. (2000), this effect was probably due to the frequent use of open

questions during the CI, and encouraging the participants to develop their answers. However, these authors did not minimize the combined effects of other techniques used during the CI. This study offers interesting answers for professionals in the judicial field, as people disclose facts several years after the events for certain types of crimes or offences (e.g., physical or mental abuse). In anticipation of future studies, this study indicates that the CI should be effective for these types of events as well.

1.1.3. Interview about repeated events

In a recent study, Verkamp, Ginet and Colomb (2010) studied the effect of the CI on the testimony of preschoolers who experienced a repeated event or not (*viz.*, a painting activity). In addition to showing that more information was obtained with the CI during the free recall phase than with a structured interview, the authors observed that the CI was particularly effective for the recall of fluctuating details (details that changed each time). The identification of distinct occasional events is crucial for the construction of testimonial evidence. Indeed, from a legal point of view, testimony developed in a semantic manner (*viz.*, referring to a script) made the indictment of the assailant difficult. Investigators need precise facts on a focused event. This study is particularly relevant for enhancing the testimonies of child abuse; it also opens perspectives for similar studies with adults (e.g., cases of domestic violence or work harassment).

1.1.4. Perspectives: CI and the psychological state of the witness

When interviewing witnesses or victims of assault, investigators must often balance two attitudes. On one hand, they try to obtain targeted testimony on a focused event, and, on the other hand, they have to manage strong emotional distress. Few researchers have given their opinion about the effect of the CI on emotional distress, and, to our knowledge, no experimental study on the subject has been published. In 1992, Geiselman, Saywitz and Bornstein (cited by Bekerian & Dennett, 1993) advised against using the CI with traumatized children, arguing that the CI could cause flashbacks and thus increase emotional distress, which could stop the progress of the interview. In a more recent paper, Fisher and Geiselman (2010) argued that the CI should contribute more to the well-being of the witness than a standard interview. Like these two point of view are in opposition, there is need for experimental or naturalistic studies to better test the effect of the CI on the psychological state of the interviewee during and after the interview in function of the emotional level of the targeted event. Moreover,

this problematic has fueled the debate concerning the use of the CI as a therapeutic tool. Some authors consider the CI, or more precisely some of its components such as the mental reinstatement and the change of order instructions, as potentially applicable with therapeutic aims (Memon & Bull, 1991; Shepherd, Mortimer, Turner, & Watson, 1999), while Geiselman (1999) advised against this type of use until experimental studies are concluded. In short, experimental and interprofessional studies should be relevant to answer these questions.

1.2. Is the CI adequately adapted to various types of witnesses?

Researchers have examined if the CI is also effective with persons *a priori* vulnerable (viz., more suggestible and/or having low cognitive abilities) such as older persons, children, and persons with learning disabilities.

1.2.1. Interviewing older witnesses

Research on CI with older persons (more than seventy years of age) is scarce, however, the same conclusions have been found: witnesses interviewed with the CI recalled more correct information than witnesses interviewed with a standard interview (Dornburg & McDaniel, 2006; McMahan, 2000; Mello & Fisher, 1996; Wright & Holliday, 2007). Older witnesses recalled slightly more incorrect information without affecting the accuracy rate. Moreover, these studies made it possible to identify factors likely to explain the effect of the CI. For example, Mello and Fisher (1996) observed that a group of older witnesses (mean age 72 years) obtained better performances than a group of younger witnesses (mean age 22 years) when interviewed with the CI. The higher performances of the older witnesses were correlated with a richer vocabulary level (confirmed by the multiple-choice vocabulary test of Shipley, 1940). These authors explain this link by the fact that the CI generates more voluminous free recalls than answering closed questions; thus, people with a higher vocabulary level have better performances. These authors also suggested that this greater ability is probably also linked to a better understanding of the “explicit” and “implicit” explications suggested during a CI. However, in this study, the number of participants per condition was not very high (about ten) and the age variable was confounded with the level of vocabulary. It will be relevant to do further research with a vocabulary variable. Dornburg and McDaniel (2006) also looked at the intellectual ability of the participants. They used an aptitude test measuring frontal functioning

(a battery of neuropsychological tests by Glisky, Rubin, & Davidson, 2001). Further research showed a link between the neurological deficiency of the frontal functioning and the increase in memory errors (Butler, McDaniel, Dornburg, Price, & Roediger, 2004): the participants who recalled the greatest amount of incorrect information when interviewed with the CI were the ones who had a low frontal functioning score.

1.2.2. Interviewing children

Research on the CI with children did not conclude in an interactional effect between the CI and age, however, it showed that the CI allows one to obtain more correct information without an increase in incorrect⁴ and confabulated⁵ information (Chapman & Perry, 1995; Flin, Boon, Knox, & Bull, 1992; Geiselman & Padilla, 1988; Verkampt & Ginet, 2010). However, the CI requires a certain amount of adaptation to fit children's abilities. For example, Geiselman and Padilla (1988) advised against using the change of order instruction and making the child verbalize out loud during the phase of mental reinstatement. Later, several researchers also confirmed that the change of order instruction could be a problem for 4 to 5 year old children (Holliday & Albon, 2004) and also for some 8 to 9 year olds (Akehurst, Milne, & Kohnken, 2003). In the same vein, Verkampt and Ginet (2010) showed that a CI in which the change of order instruction was omitted, obtained even more correct information than a full CI. However, these authors also observed that the change of order instruction could also allow children to be more resistant to suggestive questions (viz., a question to which the interviewer proposes part of the answer). In a recent study, Dietz, Powell and Thomson (2010) questioned the utility of asking the child to verbalize out loud during the mental reinstatement phase. According to them, it is not more effective among 12 and 6 year old children than an instruction without verbalization out loud during free recall as during the phase of specific questioning. Other researchers tested the use of additional instructions in order to enhance the effectiveness of the CI among this population. Verkampt and Ginet (2010) validated a cued recall instruction which helps the child to structure her/his testimony when giving more details. After a first free recall, the interviewer asked the child a follow-up question: "what happened just after. . ." (repeating the child's last statement), and the same follow-up question was repeated until the child

⁴An incorrect piece of information corresponds to recalled information that the experimenter knows is a mistake. For example, the witness refers to a blue car when it was a red car.

⁵A confabulated piece of information corresponds to recalled information that was not present in the event. For example, the witness refers to a weapon when there was no weapon.

remained silent (viz., could not give any more details). Finally, Saywitz, Geiselman and Bornstein (1992) showed that before interviewing a child on the targeted-event, training the child to use the principle of the CI on a neutral event allows increasing the effectiveness of the CI.

Another result has been observed with this population: the CI enhanced the accuracy of the answers to subsequent suggestive questions compared to a standard interview (Geiselman, Fisher, Cohen, Holland, & Surtes, 1986; Memon, Holley, Wark, Bull, & Köhnken, 1996; Milne & Bull, 2003). This phenomenon is sometimes observed with adults as well (e.g., Geiselman, Fisher, Cohen et al., 1986) and is known in the literature as the “Geiselman effect”. Geiselman et al. (1986) explained this phenomenon by the fact that the CI might ward off memory distortion. They hypothesized that the CI prevents the encoding of suggested information which could compete later with the original memory. This effect presents serious practical implications as children need more follow-up questions to give detailed testimonies (Fivush, 1993). Thus, in the case where the interviewer asks suggestive questions, the child interviewed with a CI will have a greater chance of countering the effect of interrogative suggestibility (viz., under the influence of the investigator using suggestive questions, the child risks accepting the proposed answer or changing her/his answer). Despite the fact that the Geiselman effect is not systematically observed (Hayes & Delamotte, 1997), these results are encouraging and confirm the positive effect of the CI on children, as it might lower the negative effect of the investigator on children’s testimonies.

1.2.3. Interviewing people with learning disabilities

Like children, people with learning disabilities are more sensitive to the wording of questions. For example, Clare and Gudjonson (1993) showed that people with learning disabilities are more influenced by suggestive questions and are more likely to accept the answer suggested instead of saying “I don’t know” or “I don’t remember” than people without learning disabilities. On the contrary, they react the same way as people without learning disabilities when faced with negative feedback which could lead them to change their answer. Thus, it is important to design interviewing protocols that minimize the effects of interrogative suggestibility. The CI succeeds in obtaining more correct information without obtaining more errors with this specific population, however, the amount of confabulated information is also more important (Brown & Geiselman, 1990; Milne, Clare, & Bull, 1999). Yet, Milne et al. (1999) observed that the confabulated information referred essentially to the description of persons during the questioning phase. Despite the increase in confabulations, the accuracy rate

is not impaired. People with learning disabilities recalled less information during the free recall phase than the general population (Milne et al., 1999), consequently they need to be questioned more. Finally, the performances of witnesses with learning disabilities interviewed with the CI are close to the performances of witnesses in the control group (without learning disabilities) interviewed with a structured interview. Milne et al. (1999) concluded that the testimonies of people with learning disabilities should be taken into account in the same way as those of children. Nevertheless, the results of Maras and Bowler (2010) raise the question of a distinction between disabilities. Their research shows that the CI was associated with a lower accuracy rate for witnesses with autism spectrum disorder.

1.2.4. Perspectives: studying factors of inter-individual variability

With the exception of witnesses with autism spectrum disorder, the positive effect of the CI is observed whatever the age and the intellectual level of the witness. The studies presented above give an answer to the question concerning the use of the CI with all populations. Yet, in the same category, it is not unusual to observe variations in performance. It seems interesting to identify the factors explaining this variation in the effectiveness of the CI (Bekerian & Dennett, 1993). Davis, McMahon and Greenwood (2004) studied the effect of visual abilities on the recall performance of witnesses, as the CI encourages the use of imagery based techniques. However, they did not observe any relations. Other researchers offered some explanations in terms of variations in cognitive abilities (Wright & Holliday, 2007; Milne & Bull, 2002). For example, Wright and Holliday (2007) did not observe an interaction between cognitive abilities and the type of interview but, since witnesses with high cognitive abilities gave better recalls than witnesses with low cognitive abilities, these differences were observed in the same proportion in the CI and in the structured interview condition. Nevertheless, according to research on various populations (older adults: Wright & Holliday, 2007; witnesses with learning disabilities: Milne, Clare, & Bull, 1999), a variation in terms of cognitive abilities seems to predict performance on recall tasks. As mentioned above, Milne et al. (1999) showed that during the free recall phase of the CI, the performances of the witnesses with learning disabilities were close to the performances of the general population interviewed with a structured interview. In order to prove that the effectiveness of the CI varies in function of the cognitive abilities of the witness, it would be interesting to complete the experimental design of Milne et al. by adding a third group composed of people with very high cognitive abilities. Moreover, it would be possible

to test an interaction effect: with a structured interview, one could expect that cognitive capacities would predict performances, while with the CI, one would observe a leveling effect for individuals with high cognitive abilities. Indeed, in a review of the question, Planche (2000) explained the better performances of young children by a better use of cognitive strategies. It is then possible that witnesses with higher cognitive abilities would naturally use various mnemonic strategies, and that proposing the mnemonic instruction of the CI might be less effective for a witness with lower cognitive abilities. The hypothesis that the effect of the CI is due to a cognitive origin would thus be better verified.

In each case, the lower performances sometimes observed with some types of persons is generally more attributable to the characteristics of the interview protocol used, in other words to situational factors rather than to individual factors (e.g., the cognitive abilities of the witness). Thus, another field of research dealing with the phenomenon of stereotype threat in eyewitness testimonies (Colomb, Jund, Ginet, Désert, & Verkampt, 2011) seems promising to thwart the negative effects of situational factors (such as stereotypes). In particular, the use of instructions aiming at reducing stereotype threat for some categories of persons (e.g., vulnerable witnesses) could lower the negative effect of stereotypes about memory performances (e.g., older people have a faulty memory).

Overall, a large number of studies have replicated the finding that the CI makes it possible to obtain more detailed testimonies which are as accurate as those obtained with the standard interview, which seems to demonstrate the utility of the CI. However, in line with Nielsen's acceptability model, one must take into consideration the other components which interact with theoretical utility such as the cost associated with the use of the CI and the compatibility of the CI in the overall investigative process.

2. COSTS AND COMPATIBILITY OF THE CI

2.1. Costs of the CI

The question of the ratio cost/benefit of the CI has mainly been assessed in terms of effectiveness (e.g., amount of information and accuracy rate) and in terms of duration. The CI would not be so popular if it was associated with a lower accuracy rate than the standard interview. However, the relative aspect of a rate must be rationalized. At equivalent accuracy rates, the value of a testimony composed of 10 pieces of information

is probably not the same as the value of a testimony composed of 100 pieces of information, despite the fact that the latter is composed of more incorrect information. Another cost applied to the CI is its duration. In fact, some professionals underline temporal constraints which stop them from using the CI entirely (Dando et al., 2008). Knowing that the perception of time is relative, one can question the perception of the CI from the interviewer's point of view. Recently, Brunel, Py and Launay (2012) proposed new indicators which aim at measuring the costs and benefits associated with various free recalls within the CI by testing divers instructions. They measured the proportion of repeated information obtained during additional free recalls. One ratio was used to measure the redundancy of an additional recall. Another one, called cost-and-benefit, aims at assessing the amount of information the interviewer listens to again in order to obtain one new piece of information. This ratio revealed that the open-depth instruction induced a lower ratio of repeated information to new information than the other types of instructions. However, this study would gain by comparing these objective evaluations to more subjective ones (e.g., evaluations made by investigators faced with more or less redundant testimonies and with more or less new information at each recall). On the other hand, it is possible that the relevance (viz., the relevance of information during an interview for the pursuit of the investigation) of the information interacts with the evaluation of the costs. In absolute terms, all the information recalled by a witness is relevant, as one does not know *a priori* if the information will or will not be important in the resolution of a case. However, it is possible that some information is more relevant than others. For example, a detailed description of a culprit might be more important than the description of a witness/victim most of the time. Moreover, the investigator aims to make the best use of her/his time, therefore, in most cases, she/he will attempt to obtain the maximum of relevant information with minimal costs (e.g., information allowing him to qualify the facts and information allowing him to identify the culprit). Finally, another factor of use refers to the use of the CI in conjunction with other phases and aims of an investigation. This point is more developed in the following section.

2.2. Compatibility of the CI with various phases and various aims of an investigation

Most of the research on the CI focused exclusively on the eyewitness interviewing phase aiming at obtaining a detailed description of the facts.

However, police investigation is composed of multiple phases and must answer multiple aims. But what is known about the effectiveness of the CI to describe persons, to make a face composite, to identify criminals, to identify fallacious testimonies, to draw up written statements, to qualify the facts?

2.2.1. Person description

In a criminal case, when the witness does not know the culprit, the quality and the precision of the culprit's description are crucial to search for and identify her/him. In spite of studies attesting to the effectiveness of the CI to obtain more person information than a standard interview (Campos & Alonso-Quecuty, 1998; Geiselman et al., 1984; Py & Demarchi, 2006), other research has shown an increase in errors referring to person description with the CI (Hernandez-Fernaud & Alonso-Quecuty, 1997; Memon, Bull, & Smith, 1995). However, in these studies, it is not clear if the errors or the correct information refer to descriptions about clothes, the general appearance or facial details. Yet, some information such as facial descriptors are more important for recognizing a person, particularly interior facial descriptors like the eyes and the mouth (Seitz, 2002).

Finger and Pezdek (1999) specifically studied the particular activity of facial description and showed that a CI proposing the mental reinstatement instruction followed by the recall everything instruction, and an imagery based instruction induces more correct descriptors but also incorrect ones. In the same way, Newlands, George, Towell, Kemp and Clifford (1999) analyzed physical descriptions of several characters and showed that the CI favored the description of all the characters compared to a standard interview, but also led to fewer descriptors for each character. Consequently, one cannot conclude that the CI makes the activity of description easier.

Generally, facial description is recognized as a difficult activity because faces are encoded in memory in a holistic manner (Sergent, 1984; Wegner & Ingvalson, 2002); faces are also recognized in a holistic way (Davies & Christie, 1982; Tanaka & Sengco, 1997). Thus, each feature of a face is strongly linked with others features. And yet, the activity of description consists of a sequential process (Breznitz, 2002, cited by Kask & Bull, 2009) which goes against the holistic representation stored in memory. To overcome this problem, some researchers combined the CI with techniques aiming at taking into account this holistic character and obtained better facial composites (Frowd, Bruce, Smith, & Hancock, 2008; Somat & Vazel, 2004) and better person descriptions (Py & Demarchi, 2006). Using "natural" strategies such as the ones recommended in the Person

Description Interview (PDI, Demarchi & Py, 2009) could be interesting to use in combination with a CI. The CI could be used specifically to obtain information about the environment and actions, and the PDI could then be used specifically to obtain detailed person descriptions.

2.2.2. Criminal identification

In addition to the description phase, the identification phase of the suspect is often an essential phase of the investigation. It should be recalled that the identification process is a recognition process. The CI enhances recall performances, but it is not obvious that the CI also enhances recognition performances. Several studies have proved the effectiveness of the mental reinstatement instruction for an identification task (Clifford & Gwyer, 1999; Krafska & Penrod, 1985; Malpass & Devine, 1981). Moreover, this technique is identified as the most effective instruction of the CI when it is used in combination with a recall everything instruction (Milne & Bull, 2003). Consequently, the CI might enhance recognition performances. However, some studies did not confirm this hypothesis. Gwyer and Clifford (1997) showed that the CI reduced the number of false recognitions, but it did not improve correct identification compared to a structured interview.

The question of the effectiveness of the CI to improve identification must be analyzed in light of the relations between person description and subsequent identification. Indeed, it has been established that describing a face impairs subsequent recognition. This phenomenon is called the verbal overshadowing effect (Schooler & Engstler-Schooler, 1990; for a meta-analysis see Meissner & Brigham, 2001), and it seems that the more it is emphasized, the more the description is detailed (Meissner et al., 2001). This is explained by an increase in the volume of incorrect descriptors when the overall volume of descriptors increases. And yet, it is the volume of errors within a description that impairs the subsequent recognition of the described target (Meissner, Sporer, & Susa, 2008) because this poor description leads to a recoding of the visual facial trace in memory. One can expect that the CI favors the recall of more correct descriptors and also more incorrect ones, which could then increase the risk of a verbal overshadowing effect compared to a standard interview, as observed by Finger and Pezdek (1999).

Confronted by these controversial results, the CI would gain by using specific strategies to enhance person description and identification. At the same time, the compatibility of the CI with this recognition phase will also be enhanced. As mentioned above, the Person Description Interview offers a solution. Demarchi, Py, Groud-Than, Parain and Brunel (2013) showed

that the better the quality of the description, the more the target is correctly identified. They also observed that the Person Description Interview allows one to obtain numerous correct descriptors and a low volume of errors, a type of configuration which has not been observed with a checklist interview (viz., type of interview used by police officers) or a short non directive interview (viz., composed of two successive free recalls with a recall everything instruction).

2.2.3. Assessing eyewitness veracity

The CI has been proposed for interviewing witnesses whose honesty and cooperation are not in doubt. However, could the CI allow investigators to better identify liars? To answer this question, two strategies were employed separately or jointly. One consists in testing if the CI allows to better discriminate between true narration and fallacious narration by using tools assessing the veracity (credibility) of statements based on verbal criteria, such as Reality Monitoring (RM) which has 8 criteria (Johnson & Raye, 1981; Masip, Sporer, Garrido, & Herrero, 2005) and the Criteria-Based Content Analysis (CBCA) which has 19 criteria (Köhnken & Steller, 1988; Raskin & Esplin, 1991; Yuille, 1988). A testimony in which the number of criteria is high (in one or the other category) is judged as probably more credible than a testimony in which the number of criteria is low (for a detailed review of the CBCA and the RM, see respectively Masip et al., 2005; Vrij, 2005). Another strategy consists in observing if the CI allows to better discriminate true narrations and fallacious narrations during a detection task after the reading of or listening to testimonies.

Steller and Wellershaus (1995) observed a decrease of the discriminant power of the CBCA when used with a CI. However, this result was contradicted by Köhnken, Schimossek, Aschermann and Höfer (1995) who observed no interactional effect between the type of interview (viz., CI vs. structured interview) and the type of narration (viz., truthful vs. fallacious) on the number of verbal criteria. On the other hand, Hernandez-Fernaud and Alonso-Quecuty (1997) used RM criteria and observed that truthful narrations contained more contextual and sensorial information than fallacious narrations, and this even more with a CI in comparison to a standard interview. However, Larsson and Granhag (2005) did not find this interactional effect with children, confirming the critics of Steller and Wellershaus (1992).

Some researchers tested interview protocols inspired by the CI in order to enhance lying detection. Colwell, Hiscock and Memon (2002) proposed the “inferential” interview which consists of introducing perturbing

questions between the multiple recalls of the CI. However, this strategy did not allow better discrimination than the CI alone, despite the fact that these two interviews allowed better discrimination than a structured interview. Vrij et al. (2008) found that the change of order instruction (one of the cognitive instructions of the CI) made it possible to better discriminate truthful narrations from fallacious ones, and allowed better detection by police officers compared to narrations obtained by using a simple free recall. However, as argued by the authors, in the field, it does not seem plausible to ask suspects to start an interview by recounting the end of the event. Indeed, at least in France, this “unnatural” technique risks appearing as a manipulation technique on the part of the investigators, which would go against the principle of the presumption of innocence. Thus, it is more interesting to propose techniques which could enhance the recall of honest witnesses and allow the detection of fallacious testimonies at the same time. In this line, Allione (Study 2, 2008) showed that asking participants to give a second recall after a first free recall is a more effective way to discriminate between truthful and fallacious narrations (with the use of CBCA and RM criteria) than asking participants to give a second recall with a change of order instruction. In this study, contrary to Vrij et al. (2008), the change of order instruction did not allow an increase in discrimination between truthful and fallacious narrations. In the same way, Launay, Py and Brunel (2011) showed that one could increase discrimination between truthful and fallacious narrations (with the use of CBCA criteria) with a second recall using an open-depth instruction (Brunel et al., 2012). Finally, Vrij et al. (2010) showed that the use of drawing (a technique recommended by Dando, Wilcock and Milne, 2009, in place of the mental reinstatement during the CI) allowed 80% of truthful narrations and 87% of fallacious narrations to be correctly categorized.

In sum, it seems that “manipulative” techniques (e.g., inferential interview, change of order instruction during the first recall) are no more effective at better discriminating between truthful and fallacious narration than strategies which aim at helping honest people to give more detailed testimonies by stimulating memory processes. The CI or the techniques used in the CI, such as drawing and the open-depth instruction, seem to be recommended.

2.2.4. Written statement

In the inquisitorial criminal procedure (Napoleonic) that is used in most of western continental Europe (in particular, Belgium, France, Germany, Italy, Luxembourg, the Netherlands, Portugal, Spain, Switzerland) and

Latin America, the written statement plays a central role as it is considered as the official document of the witness' statements. Research examining the correspondence between the full transcription of the interview and the information mentioned in the written statement, showed that the CI is superior to a standard or a structured interview (Kohnken, Thurer, & Zoberbier, 1994; Ginet & Py, 2001). However, these studies do not indicate if the CI facilitates this specific task of writing or if the CI is a supplementary constraint. Indeed, no study exists that compares the cognitive load associated with this task of writing the statement in function of the type of interview. It is possible that it is easier to write the answers to closed questions (as during a standard interview) than writing the statements obtained with a CI which contains multiple recalls. The implementation of the CI requires additional activities in order to write the statement: memorization, taking notes and writing. These additional activities can add to the interviewer's feeling that the CI is more time consuming and less compatible with the task of writing statements.

The synthetic reformulation instruction proposed by Py, Ginet, Demarchi and Ansanay-Alex (2001) aims to offer a CI structure which conforms to the general interviewing schema used in the inquisitorial criminal procedure. The interviewer begins the interview by asking the witness to make a succession of free recalls (during which the cognitive instructions are proposed). After this phase, the interviewer reformulates what the witness recalled and asks the witness supplementary questions (corresponding to the witness compatible questioning) while preparing the written statement. Before starting the latter phase, the interviewer invites the witness to correct and add information, and to ask any questions at any time (see Demarchi & Py, 2006, for a precise description of the protocol). The aim is to make the use of the CI more compatible with an inquisitorial criminal procedure and to take into account the written statement phase.

2.2.5. Qualification of the facts

At present, investigators, whatever their nationality, use a detailed interviewing prototype characterized by the abusive use of closed questions. Wright and Alison (2004) argued that this attitude is driven by the fact that investigators try to confirm their hypothesis of the sequence of events. They analyzed 19 transcripts of witnesses' interviews by Canadian police officers, and showed that most of the questions asked are confirmatory and that few aimed at obtaining a more detailed testimony. There are probably other reasons that drive investigators to behave in this way. It is possible that these types of questions allow the interviewer to make

sure she/he understands the sequence of events but, at the same time, these questions probably help her/him to qualify the facts. This aim of an investigation is rarely mentioned in the literature. Yet the qualification has consequences for the pursuit of the investigation and, in the end, the judgment. For example, in the case of sexual abuse, the investigators need to know precisely if there was penetration or not. In the first case, in France, the case will be qualified as rape (a crime) and in the second case it will be qualified as sexual assault (an offence). The investigator's investment is often directly related to the seriousness of the facts. The investigator is ready to spend a lot of time on a crime; in the case of ordinary offences, he might try to make her/his time profitable and go to the essentials. The qualification of the facts seems to be a priority during an investigation. Thus, despite the fact that the CI allows investigators to ask closed questions when all less directive questions have been used, it is likely that this aim monopolizes the interviewers' minds and pushes them to ask questions quickly. The interviewer's focus on qualifying the facts is problematic on two levels, and lowers the compatibility and the effectiveness of the CI. On one hand, the interviewer probably does not feel ready to do a congruent CI until she/he has qualified the facts. On the other hand, her/his assessment of the cost and benefit of the CI also plays a role in its implementation.

One proposition worth testing would be to formalize an intermediate phase before the exhaustive narration of the facts, which will allow the investigator to know more precisely the type of case and immediately assess the ratio cost and benefit of using a CI (see Brunel et al., 2012, for a discussion about the notion of ratio cost and benefit during a CI). Such an early phase could also be compatible with witnesses of an emotionally charged event: witnesses who often seem driven by the urge to talk, which hinders the concentration needed to mentally reinstate the context of the critical event. This first brief recall would probably allow the interviewer to immediately qualify the facts (even this qualification might change during the interview) and might also function as an emotional outlet for the witness.

3. USABILITY OF THE CI

Numerous studies to date testify to the utility and the effectiveness of the CI (viz., obtaining more information without impairing the accuracy rate) in interviewing eyewitnesses of crimes or offences. But what is known about

its usability? According to Nielsen (1993), usability refers to practical use and takes into account how easy a technique is to learn, its efficiency (viz., “the expert user’s steady-state level of performance”, p.30), its memorability, prevention of errors, and subjective satisfaction. The notion of usability of the CI, which has been the object of publications on training assessments, has been essentially approached through learning/training (including aspects of memorability and the prevention of errors). Moreover, surveys of its practice in the field have evaluated its subjective satisfaction using the concept of the perceived utility of the various CI techniques. These studies led to some propositions to enhance the usability of the CI (taking into account the notion of efficiency) and to enhance the learnability of the CI.

3.1. CI learnability

Assessments of CI training with police officers showed that after a CI training lasting from 3 hours to 2 days, investigators asked significantly fewer questions when using their usual interviewing technique than they did at the beginning of training (Clifford & Georges, 1996; Ginet & Py, 2001). The results concerning the application of the various CI techniques are mixed. Thus, the change of order instruction is the least used, and the change of perspective is no longer used (Clifford & George, 1996). Memon, Holley, Milne, Koehnken and Bull (1994) also observed that the formulation of the change of perspective instruction by police officers and its application by witnesses were problematic. Moreover, Py et al. (2001) reported that French police officers rejected the application of this instruction. Ginet and Py (2001) also pointed out another instruction that was problematic for police officers. They observed that the recall everything instruction was the least used: 10 times in 15 interviews. When it was used, its formulation was not complete. Police officers formulated the idea to recall every piece of information, even the ones which could appear less important, but they were reluctant to encourage witnesses to recall uncertain details, despite the fact that this allows witnesses to lower their decisional level to recall more information, information which is not more erroneous. Finally, the mental reinstatement instruction was used by police officers but its formulation was also not always complete, or the officers did not give the witness enough time to do the reinstatement activity (Ginet & Py, 2001; Memon et al., 1994). The consequences of these “errors” were to reduce the positive effect of the CI to generate more detailed testimonies.

3.2. Solutions proposed for better usability

3.2.1. Modifications to the CI

Surveys of CI practice in the field underlined environmental and temporal constraints which stop police officers from using the CI entirely (Kebbell & Milne, 1998; Kebbell, Milne, & Wagstaff, 1999). Based on these observations, researchers took account of these restrictions and proposed additional instructions or new CI formats.

Davis, McMahon and Greenwood (2005) showed, for example, that a motivated recall instruction generated the same amount and the same quality of recall than the change of order or the change of perspective instructions, and saved time. This observation was confirmed by Bensi et al. (2011). Dando et al. (2009a, 2009b, 2011) aimed to shorten the length of the interview, and showed the advantages of a new format of the mental reinstatement instruction which asks the witness to draw a sketch of the event. This new format saved time and was effective as the standard mental reinstatement instruction. Moreover, this new format reduces the influence of the interviewer (*viz.*, who could propose inappropriate recall cues), is easy to use and does not require specific training. Other instructions have been proposed. The open-depth instruction increased the reminiscence phenomenon during an additional recall (Open-Depth Instruction: Brunel et al., 2012; Demarchi & Py, 2006; Ginet & Verkampt, 2009; Launay et al., 2010; Py et al., 2001). This instruction mainly consists of asking the witness to tell what happened one more time, and to focus her/his attention on all the peripheral details she/he did not have opportunity to mention or develop during the previous recall (for a full description, see Brunel et al.). In the same perspective, other researchers proposed instructions aiming at helping the witness to structure her/his recall and to stimulate more detailed testimonies. Thus, Colomb and Ginet (2011), inspired by the open-depth instruction, proposed the “guided peripheral focus” instruction, which consists of dividing the memory of the event into a set of main actions, as a complement to the open-depth instruction. In the same vein, Verkampt and Ginet (2010) proposed using a “cued recall” instruction with very young children to allow them to structure and develop their testimony without being too suggestive. Finally, other researchers proposed a paper interview version: the self-administered interview (Gabbert, Hope, & Fisher, 2009; Hope, Gabbert, & Fisher, 2011). This interview is recommended in multiple witness events, where it is impossible for the police to interview all of the witnesses in a short delay. Moreover, it aims at avoiding deleterious memory effects and at stopping the effect of witness cross contamination (Hope et al., 2011).

Witnesses interviewed with this self-administered interview recalled as much information as witnesses interviewed with the CI (Gabbert et al., 2009).

3.2.2. Enhancing learnability

3.2.2.1. Follow-up feedback

Some CI components are not systematically applied or correctly formulated after training. To solve this, researchers agreed to enhance CI training by multiplying practical situations (interview simulation) and by reinforcing feedback. Powell, Fisher and Hughes-Scholes (2008) tested various types of feedback during training (viz., at the end or during interview simulation). The training did not concern the CI, but referred to the use of open questions (a main CI technique) in the case of interviewing victims of child abuse. In spite of the positive effect of the training observed at the end of the program, twelve weeks later the participants again used more directive questions. In another study aiming at observing the relations between the police officers' ranks, their interviewing skills, and gender on the use of open questions to interview children, Smith, Powell and Lum (2009) observed that the only variable which significantly explained the variation in performances between the officers was the delay between the target interview and the training session (viz., the greater the delay, the less open questions were used). Consequently, the authors of these studies recommended continuous training. However, according to Lamb, Sternberg, Orbach, Esplin and Mitchell (2002) and Lamb, Sternberg, Orbach, Hershkowitz, Horowitz and Esplin (2002), even continuous training is not enough, since the officers revert to their old behaviors after the program stops.

Therefore, the learnability of the CI is not enhanced by more quality feedback or continuous training (time and financial costs). Other solutions must be tested in terms of pedagogical strategies to enhance learnability.

3.2.2.2. Adapting training in function of the status of the investigators

In the United Kingdom, the training of police officers is divided into 5 levels ranging from introductory to advanced training, which takes into account the hierarchical level and the complexity of the crimes investigated (Griffiths & Milne, 2006). The first level, essentially for new recruits, consists of an introduction to the interview techniques. The second level is a consolidation and deepening of the first level for more experienced

officers who deal with robberies and attacks on a daily basis. The third level is for officers who are involved with more complex and serious crimes, and focuses on specific training in interviewing suspects, witnesses (viz., CI), and vulnerable witnesses (like children). The fourth level consists of managing the quality of the interviews, and the fifth level introduces the role of interview manager for complex and serious crimes. To our knowledge, an assessment of this type of step by step training is not available. Nevertheless, this type of training seems promising as it takes into account the professional's level of skills and the variations in their missions, which generate specific training and probably would induce better use of the CI.

3.2.2.3. A new perspective: increasing commitment during training

The training format and its contents can explain variations in investigators' performances. The practical character of training (with numerous simulations) has always been proposed as a solution to enhance the use of the CI in the field. However, researchers have attempted to enhance CI training for more than twenty years. But the CI is still not used systematically when it should be. The problem must be examined from another angle and the training format should be questioned.

With the well-known research of Lewin (1947), commitment has become an essential element in obtaining behavior change. However, in some case, CI training (the practical aspect put aside) can resemble the presentation of information or a persuasive message. Thus, complementing training with strategies based on commitment could lead the participant to apply the CI more systematically. Continuous training looks like commitment strategies, but it has never been argued in this way. The paradigm of binding communication (Girandola & Joule, 2008; Joule, Py, & Bernard, 2004) could be tested during CI training. Contrary to a classic situation of communication in which the trainee is passive (viz., an information receptor), in situation of binding communication, the trainee is active. According to this paradigm, in addition to reflection about the contents of the training (viz., "what is the good information to transmit?"), the best way to present the contents (viz., "what are the best arguments?"), and the best supports to use (viz., "what are the best tools of communication?"), one has to think about the "preliminary acts to be obtained from the trainees". According to Zbinden, Souchet, Girandola and Bourg (2011), one must take into account the social representations associated with the target behavior to select the best arguments to use in

actions of binding communication. In some respects, this perspective is consistent with the social acceptability aspect of Nielsen's model.

4. CONCLUSION: SOCIAL ACCEPTABILITY OF THE CI, RESEARCH PERSPECTIVES TO DEVELOP

Numerous studies on the CI essentially referred to the practical acceptability of the CI, in particular its utility. Thus, the effectiveness of the CI has been proved for obtaining testimonies about crimes and offences. A great deal of research has shown the utility of the CI with various witnesses (viz., children, adults, older persons, persons with learning disabilities). Concerning practical acceptability, research has also attempted to measure the ratio cost/benefit of the CI, others to define the compatibility of the CI with the various phases and aims of an investigation. Some of the research has proposed new instructions or techniques aiming at enhancing the usability of the CI through its training. There is still much to be done to enhance the usability of the CI. In reference to Nielsen's (1993) model, a gap seems to exist in the study of the social acceptability of the CI, which is not the case with practical acceptability. Indeed, the conjunction of these two dimensions determines the adoption of new behaviors.

When one focuses on the questions asked in the various surveys about using the CI technique in the field, the dimensions assessed are self-reported behaviors and attitudes about the perceived utility and/or the perceived effectiveness of a specific technique (Brown, Lloyd-Jones, & Robinson, 2008; Dando et al., 2008; Kebbell et al., 1999). In future studies, it would be interesting to measure the social acceptability of the CI from a normative point of view. For example, in another area, Lefevre et al. (2008) examined why drivers were reluctant to use driver support systems. They measured the social acceptability using a social normative paradigm, the self-presentation paradigm (see Gilibert & Cambon, 2003, for a review of the question) in order to evaluate judgment of the use of driver support systems. These authors showed how a social norm (viz., norm of a good driver who is capable of controlling the situation) could affect the choice of using or not new technologies. Applied to the problematic of the CI, this type of research opens several perspectives for reflection. First, it will be interesting to identify the representation associated with the profession of investigator (e.g., a "good" investigator). Then, one could measure social acceptance (in addition to the perceived utility) of the various techniques recommended in the CI. Thus, one might know if

the CI is underused because it is unsuitability linked to the professional representation. For example, in the CI, the interviewer is explicitly asked to transfer control to the witness, however, is this transfer compatible with the social representation of being a “good” investigator, or what Nielsen calls the personal identity?

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