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Cost and benefit of a new instruction for the cognitive interview: the open depth instruction

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The quality and the quantity of information recalled by eyewitnesses during a criminal investigation is of crucial importance. To increase the volume of details recalled during an interview, the cognitive interview recommends using various retrieval strategies to enhance recall. We tested a new retrieval instruction, the open depth (OD) instruction. The efficacy of this new instruction was assessed with the number of unit of information and the accuracy rate. We also assessed the cost-and-benefit of this new instruction with measures of repetition. Students watched a video of a simulated robbery and participated later in face-to-face interviews. In Study 1 (N = 60), the cognitive interview using the OD instruction increased recall compared to the interview using the change of perspective (CP) instruction, without affecting the accuracy rate. The redundancy rate was higher with the OD instruction than with the CP instruction. In Study 2 (N = 40), the OD instruction generated more new information without affecting the accuracy rate than the interview using motivated recall (MR) instruction. The repeated information to new information ratio was lower with the OD instruction than with the MR instruction. The advantages of the OD instruction for investigative interviewing purposes are discussed.

Keywords: cognitive interview; redundancy; instruction; interviewing; witness/victim

Introduction

Eyewitnesses are very important to a criminal investigation as they hold a great amount of information which can determine the continuation and the outcome of the investigation. Thus, there is a need for optimum interviewing techniques which fit the practical needs of police officers. It is now well documented that police officers favor the use of closed versus open questions when interviewing witnesses or victims of crime (Fisher, Geiselman, & Raymond, 1987; Ginet & Py, 2001; Wright & Alison, 2004). Yet, open-ended questions produce detailed descriptions and are associated with a better accuracy rate than closed questions (Feltis, Powell, Snow, & Hughes-Scholes, 2010; Gudjonsson, 1992; Peterson & Bell, 1996). Obtaining detailed descriptions while minimizing the intervention of the interviewer in terms of questioning can be accomplished by stimulating multiple free recalls using specific instructions (Geiselman et al., 1984). Multiplying retrievals (viz., the succession of multiple free recalls within a single interview) is one of the key recommendations of the cognitive interview (Fisher & Geiselman, 1992) which has been demonstrated...
to be an efficient technique for interviewing eyewitnesses (see Memon, Meissner, & Fraser, 2010, for a recent meta-analysis; Köhnken, Milne, Memon, & Bull, 1999).

**The cognitive interview and its developments**

The cognitive interview (CI) consists of different instructions based on communication principles and cognitive knowledge about memory (Fisher & Geiselman, 2010; Fisher, Geiselman, Raymond, Jurkevich, & Warhaftig, 1987). Building rapport with the eyewitness is particularly important to encourage her/his active participation, as is using open-ended questions rather than closed or leading questions while following a witness compatible questioning layout in order to ease communication and to increase the volume of information recalled (Fisher & Geiselman, 1992). The CI is also composed of different mnemonic instructions aimed at enhancing memory recollection such as mentally reinstating the context of the event, reporting everything, encouraging multiple retrievals by recalling the event in reverse order and/or by changing perspective (Geiselman et al., 1984).

It has been shown many times that the cognitive interview (CI), when compared to a 'standard' police interview or a structured interview1, is more effective when it comes to obtaining full and accurate testimony (Clifford & George, 1996; Geiselman, Fisher, MacKinnon, & Holland, 1986; Ginet & Py, 2001). However, police officers have difficulty in implementing this technique. Even when police officers use the CI, their use is not complete. For example, some instructions are poorly formulated and some principles such as multiple retrievals seem not to be used systematically. In England and Wales, despite an extensive effort to introduce the CI (Memon, Holley, Milne, Koehnken, & Bull, 1994) and courses given during initial police officer training (Kebbell & Milne, 1998), Dando, Wilcock, & Milne (2008) showed that British frontline police officers do not use a complete cognitive interview during police investigations. The two techniques related to multiple retrievals – the change of order instruction and the change of perspective instruction – being ranked as the least useful and the least used. Time is also given as an explanation for not applying the cognitive interview in its entirety. Therefore, one may ask if an efficient interviewing method developed in an experimental setting can be easily implemented in an investigative or a professional setting. Fisher & Geiselman (2010) argue that it is important to develop new techniques that can be added to the CI and fit police officers’ objectives. In line with this idea, researchers have proposed modified and adapted cognitive interview protocols. Gabbert, Hope, & Fisher (2009) developed the Self-Administered Interview Tool for police officers faced with multiple eyewitnesses at the same crime scene. Dando and colleagues recently developed a modified procedure for frontline police investigators (Dando, Wilcock, & Milne, 2009; Dando, Wilcock, Behnkle, & Milne, 2011; Dando, Wilcock, Milne, & Henry, 2009). Other researchers proposed new instructions (i.e., for a study with preschoolers, see Verkampt & Ginet, 2010) which could be added to the CI ‘toolbox’ (Fisher, Milne, & Bull, 2011).

Therefore, the aim of this study was to determine the efficiency of a new instruction, the ‘open depth’ instruction2, which was presented in a French governmental report by Py, Ginet, Demarchi & Ansanay-Alex (2001)3. The theoretical foundations of this instruction are similar to those of the change of order and change of perspective instructions which refer to the multicomponent view
of a memory trace (Bower, 1967), which posits that varying the retrieval strategies can allow the witness to access allegedly inaccessible memories (Tulving, 1974). Moreover, this instruction aims at overcoming the limitations pointed out by investigators who ‘believe that eyewitnesses rarely provide sufficient information, especially descriptive details as opposed to action details’ (Kebbell & Milne, 1998). Similarly, Loftus & Fathi (1985) showed that eyewitnesses concentrate more on actions and ‘under-recall’ ‘peripheral’ information. According to research on discourse structure, people concentrate on certain details when narrating an event (i.e., the main character, the action, the setting) (Pu, 2006). The open depth instruction aims at inducing an additional recall attempt4 and allows the interviewee to complete her/his testimony by her/himself before going through a witness compatible questioning phase, in order to maximize the number of details recalled while minimizing the influence of the interviewer. Technically, the interviewer asks the witness to proceed to another recall. He asks her/him to repeat his/her testimony and to detail it with ‘peripheral’ details. The term ‘peripheral’ refers to all the types of information which have not yet been recalled (viz., person, action, object, location, speech) and elements which could be further detailed. Moreover, the interviewer must clearly state her/his expectations when formulating the instruction. Indeed, being explicit has been shown to be an essential part of the effectiveness of many instructions such as, for example, the report everything instruction (Boon & Noon, 1994) and the focused attention instruction (Clifford & George, 1996). Finally, the interviewer proposes that the interviewee use a specific imagery strategy to help her/him to recover and to recall new information with the analogy of the freeze action of a video player. The present research will examine the efficacy of this instruction.

Cost and benefit of additional recalls: proposing new measures

The CI is very efficient in generating detailed testimony and it also lowers the risk of social influence on the part of the interviewer. However, considering all the skills which this technique requires, it is likely that some interviewers perceive this type of interview as cognitively demanding (Fisher & Geiselman, 1992; Fisher, Geiselman, & Amador, 1989; Kebbell, Milne, & Wagstaff, 1999). Moreover, some interviewers may reason from a value for money perspective, expecting to obtain a large amount of information while spending minimal time. This becomes crucial when having to decide which instruction should be used to generate additional retrievals. In a recent study, Ask, Granhag, & Rebelius (2011) indicated that goal-directed processing activated at the time of the interview (i.e., thoroughness or efficiency) may have a strong influence on the investigator. An investigator focused on ‘thoroughness’ would know that even if a specific instruction does not generate a large amount of information, this little information can be very important to the success of the investigation; an investigator focused on ‘efficiency’ would probably reason from a ‘value for money’ perspective.

We propose to measure the cost-and-benefit associated with an additional retrieval in order to convince the latter type of investigator. We calculated various ratios taking into account the amount of repeated information in addition to the amount of new information recalled in an additional recall. Until now, in laboratory experiments, the efficiency of an instruction leading to additional recall has usually been measured by examining the quantity of new items of information and their
accuracy; repeated items (viz., those already mentioned in previous recalls) were not
counted (Dando, Wilcock, & Milne, 2009; Davis, McMahon, & Greenwood, 2005;
Memon, Wark, Bull, & Koehnken, 1997). However, the volume of repeated
information within a same interview session is likely to negatively affect the listener’s
(i.e., the interviewer) perception of the testimony. The foundations of this assumption
can be found in one of the four Cooperative Principles proposed by Grice (1975):
‘Quantity’. Grice emphasized that being ‘overinformative is not a transgression of
the Cooperative Principles but merely a waste of time’ (1975, p. 124).

The aim of the studies presented here was to compare the efficiency of different
instructions used during a second recall attempt with the usual measures and with
measures taking into account the amount of repeated information. Study 1 aimed at
assessing the efficiency of the open depth (OD) instruction.

Study 1
Method
Design
A between subjects experimental design was used with interview as the independent
variable with three levels: (1) structured interview (SI), (2) cognitive interview with a
change perspective instruction (CICP), and (3) cognitive interview with an open
depth instruction (CIOD).

Participants
Sixty psychology students (55 women) at the University of Paris 8 (France),
participated in the experiment; most of them fulfilled a requirement for a psychology
course, others were volunteers. The mean age of the participants, ranging in age from
18 to 50 years, was 23.15 (SD = 5.62).

Material
The stimulus material consisted of a 30 seconds long color video depicting a student
being robbed at the university. The video simulated the point of view of a potential
witness and was filmed from a single angle. A female student joined two other
students to chat. She put her bag on the ground next to her right foot. A few seconds
later, a young girl walked up behind the woman, grabbed her bag and ran away. Four
bystanders were nearby.

Interview conditions
The main author conducted all the interviews. In addition to reviewing the literature
related to the cognitive interview, the main author was given practical training by the
second author who had trained hundreds of French police officers in the CI/ECI
technique. The practical training consisted of a succession of recorded role-plays (as
interviewer, mock-witness and observer) followed by individual feedback on the
interviewing technique. The interviewer followed a strict protocol (verbatim)
according to the condition. The structure used in interviews was similar to the one
recommended by Milne & Bull (1999; i.e., (1) greet, (2) rapport, (3) explain, (4) free recall, and (5) closure) and was the same in all conditions. However, as the aim of the research was mainly focused on the free recall phase induced by general instructions, it did not include a witness compatible questioning phase (see Campos & Alonso-Quecuty, 1999, for a similar interview structure). All interviews comprised two free recalls in which the variable manipulation was introduced.

**Cognitive interviews (CICP and CIOD)**. For the first free recalls in both conditions, the interviewer instructed the interviewee to report everything and helped the interviewee to mentally reinstate the environmental and person-related context surrounding the TBR event (see Appendix 1). For the second free recall, in the CICP condition, the interviewer gave a change of perspective (CP) instruction (verbatim): ‘That’s good! We have a lot of information about this event. I’m going to give you another instruction which is very useful for enhancing memory. It is important that you maintain your concentration. I would like you to tell me about the event a second time, by trying to adopt the perspective of another person in the video. If it helps, you can use the first person. The goal is still to get the maximum information’. For the second free recall, in the CIOD, the interviewer gave an OD instruction (verbatim): ‘That’s good! We have a lot of information about this event. I’m going to give you another instruction which is very useful for enhancing memory. It is important that you maintain your concentration. During a first recall, people often concentrate on certain type of details, mainly actions and cannot report everything they have in mind. Please, tell me once again everything you saw/remember about the event, and focus your attention on all little details you did not have the possibility to report. It doesn’t matter if you repeat yourself. Give as many details as you can. If it helps, freeze on some of the images you remember, and describe each of them. The goal is still to get the maximum information’.

**Structured interview (SI)**. For the first free recall (FR), the interviewer asked the interviewee to relate what s/he remembered about the film as completely and precisely as possible. For the second free recall (FR) attempt, the interviewer explained to the interviewee that retelling the testimony is very useful for enhancing memory, then she/he asked her/him to give a second recall and to try to give the maximum information (see Appendix 2).

**Procedure**

Three groups of students (groups of approximately 25) watched the video at the end of a class. Then the students were interviewed individually with a delay varying from three minutes (filler task completed just after the event) to eight days ($M = 4.35$). The appointments were arranged before viewing the film at the beginning of the class; at this stage, they were only informed that they would take part in an experiment which would be related to the topic of the course (viz., research methodology). Therefore, when they arrived at the interviewer’s office, they did not know that they would be interviewed about the film. Each participant was randomly assigned to one of the three conditions (viz., SI, CICP or CIOD).
**Scoring**

All the interviews were audio recorded, transcribed verbatim and scored. The following scoring procedure was used. Each item of information was classified into categories related to action, environment, person or object (the amount of this last type of information was so low that we regrouped it under the category ‘person’). Each item was then evaluated as correct, incorrect or confabulated. As the number of confabulations was very low, we decided to include them as incorrect items. A differential scoring was also used to take into account the level of precision. For example, *a person* would be given one point; *a girl* would be given two points. Repeated items were also counted but only for the second recalls (if an item was repeated twice or more during a second recall, it was only counted once). A repeated item of information is an item which was already given in the first recall.

Twelve interviews (20%) were randomly selected and were scored separately by two different raters. The inter-rater agreement was calculated with Pearson’s coefficient on correct, incorrect and repeated information. As the results were low, the two raters compared their coding in order to uniform the coding strategy. Twelve new interviews were coded separately. Results suggested very good inter-rater agreements for correct, \( r(12) = .84, p < .001 \), incorrect, \( r(12) = .94, p < .001 \), and repeated information, \( r(12) = .99, p < .001 \). Consequently, the first author used the same coding for the other 48 interviews.

As with previous research on the cognitive interview, the efficiency of each technique was compared by using the usual dependent variables: the amount of correct and incorrect information, and accuracy rates. Additional dependent variables \(^6\) were examined in order to weigh the cost and benefit of an additional recall.

- The **redundancy rate** was equal to the amount of repeated information divided by the amount of information given during the first recall. A recall with a redundancy rate equal to one would be a recall in which all the previous information had been recalled again.
- The **ratio cost-for-profit** corresponded to the ratio of the amount of repeated information divided by the amount of new information. This indicator allows us to know how many repeated units of information the interviewer will have to listen to again in order to get one new item of information.

**Results**

A series of one-way ANOVAs (for duration, correct items, incorrect items, accuracy, redundancy rate and ratio cost-for-profit) was conducted, examining the between-subjects factor of type of interview (SI, CICP and CIOD). Significant findings were examined using Games-Howell post hoc test.

**The delay**

As the delay between the encoding session and the interview varied from three minutes up to eight days, it was possible that the significant results observed for the number of correct items reflected variables other than the interview condition.
However, the delay had a weak and not significant relationship with the number of total correct items, $r(60) = -0.15$, ns.

**Duration**

A significant effect of interview was found on duration, $F(2, 57) = 30.51$, $p < .001$, $\eta^2 = .52$. The duration included the presentation of all the instructions and the free recalls, and excluded the ‘greeting’ phase and the ‘rapport’ phase. No significant difference was observed between the CIOD ($M = 7.83$ minutes) and CICP ($M = 7.57$ minutes) conditions. SIs ($M = 3.73$ minutes) took significantly less time to conduct than the CICPs and CIODs.

**Overall memory performance**

A significant effect was found for the number of total correct items recalled, $F(2, 57) = 8.28$, $p = .001$, $\eta^2 = .22$. There was no significant difference between the CIOD ($M = 33.70$) and CICP ($M = 26.60$) conditions. Cognitive interviews (viz., CIODs and CICPs) elicited more correct items compared to the SIs ($M = 22.90$). A significant difference was also found between interview conditions for the number of total incorrect items recalled, $F(2, 57) = 4.10$, $p = .022$, $\eta^2 = .13$. There were significantly fewer incorrect items in the SI condition ($M = 1.50$) than in the CICP ($M = 3.15$). No significant differences were found between the SI and CIOD ($M = 2.45$) conditions and between the CICP and CIOD conditions for the number of incorrect items. A significant difference was found between the conditions for accuracy rate, $F(2, 57) = 4.52$, $p = .015$, $\eta^2 = .13$. The accuracy rate of the CICP ($M = .89$) condition was significantly lower than the SI ($M = .94$) condition. No significant difference was found between the SI and CIOD ($M = .92$) conditions and between the CICP and CIOD conditions for the accuracy rate.

**Efficacy of the mnemonics for the second recall attempt**

The means and standard deviations for the first and the second recalls are shown in Table 1. A significant difference was found between the conditions for the number of new correct items recalled in the second recall attempt, $F(2, 57) = 11.20$, $p < .001$, $\eta^2 = .28$. The CP ($M = 3.05$) instruction did not elicit more new correct items than the FR instruction ($M = 4.35$) in the SI condition. The OD ($M = 9.05$) instruction led to more new correct items than the CP instruction and the FR instruction. No significant difference was found between the conditions for the number of new incorrect items $F(2, 57) = 1.48$, ns. Moreover, no significant difference was found between interview conditions for accuracy rates $F(2, 57) = 1.85$, ns.

Moreover the data were subdivided to examine the categories of information generated (person, action and surroundings). A significant difference was found for the number of new correct items related to surroundings, $F(2, 57) = 12.92$, $p < .001$, $\eta^2 = .31$. No significant difference was found between the FR ($M = 0.50$) and the CP ($M = 0.45$). Significant differences were found between the FR and the OD ($M = 3.15$) and between the CP and the OD. Significant differences were found for the amount of new correct information related to action, $F(2, 57) = 12.92$, $p < .001$, $\eta^2 = .19$. Significant differences were found between the FR ($M = 1.95$) and the CP.
(M = 0.55) and the CP and the OD (M = 2.30), but no significant difference was found between the FR and the OD.

**Indicators of repetition**

The means and standard deviations for the indicators of repetition are shown in Table 2. The redundancy rate was higher in the SI condition (M = .86) than in the CICP (M = .49) and in the CIOD (M = .65), F(2, 57) = 21.83, p < .001, η² = .43. Post-hoc analysis revealed that the CP instruction led to a lower redundancy rate than the OD instruction and the FR instruction. Moreover, the redundancy rate was lower with the OD instruction than with the FR instruction.

The analysis related to the ratio cost-for-profit revealed that to obtain one new item of information with the OD instruction, the interviewer only had to listen to 2.67 repeated items, against 6.29 and 5.59 for the FR and the CP instructions, respectively. However, despite the mean favoring the OD instruction, the ANOVA

<table>
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<th>Variable</th>
<th>SI</th>
<th>CICP</th>
<th>CIOD</th>
</tr>
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<tbody>
<tr>
<td>Correct – First recall</td>
<td>18.55</td>
<td>23.55</td>
<td>24.65</td>
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<tr>
<td>Correct New – Second recall</td>
<td>4.35</td>
<td>3.05</td>
<td>9.05</td>
</tr>
<tr>
<td>Correct – Total recall</td>
<td>22.90</td>
<td>26.60</td>
<td>33.70</td>
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<tr>
<td>Incorrect – First recall</td>
<td>0.95</td>
<td>2.55</td>
<td>1.55</td>
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<tr>
<td>Incorrect New – Second recall</td>
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<td>0.60</td>
<td>0.90</td>
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<tr>
<td>Incorrect – Total recall</td>
<td>1.50</td>
<td>3.15</td>
<td>2.45</td>
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<tr>
<td>Accuracy – First recall (%)</td>
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<td>90.80</td>
<td>94.40</td>
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<tr>
<td>Accuracy New – Second recall (%)</td>
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<td>77.50</td>
<td>88.80</td>
</tr>
<tr>
<td>Accuracy – Total recall (%)</td>
<td>94.10</td>
<td>89.30</td>
<td>93.35</td>
</tr>
<tr>
<td>Interview duration (min)</td>
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<td>Correct – First recall</td>
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<td>Correct New – Second recall</td>
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<td>Interview duration (min)</td>
<td>3.43</td>
<td>7.34</td>
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</table>

Table 2. Measures related to repetition for SI (N = 20), CICP (N = 20) and CIOD (N = 20) conditions, Study 1.
revealed only a non-significant difference. Nevertheless, the effect size was medium which led us to think that a difference exists, $F(2, 57) = 2.79, p = .07, \eta^2 = .09$.

Discussion

Study 1 shows that the participants gave more additional correct information without giving more incorrect information with the OD instruction, compared to the CP and the FR instruction. Moreover, the OD instruction generates the recall of information related to surroundings, a type of information which is under-recalled with the CP instruction and the FR instruction. In terms of redundancy, the CP instruction leads to a lower redundancy rate. However, as the number of new units of information elicited is lower than with the OD, the cost-for-profit associated with the CP is less favorable than the one associated with the OD instruction. Globally, more additional types of information can be obtained with the OD instruction without having to listen to a lot of repeated information. A possible explanation for this result might be that, contrary to the OD, the CP offers the witness a radical new way to recall the event and this explains the low redundancy generated with the CP. However, the way in which the event is recalled with the CP is probably too specific for the witness to give many types of details. With the OD, the witness uses the same structure of recall and strengthens his/her testimony by giving more details at each step. Therefore, we observe more redundancy but also more new information.

However, it is possible that the beneficial effect of the OD instruction is only due to a motivational effect rather than to a retrieval strategy that would give access to allegedly inaccessible memories (Tulving, 1974). To answer this question, it is necessary to compare the OD instruction to an instruction aimed only at motivating the participants to give a second recall. In the second experiment, we compare the OD instruction to the motivated recall instruction proposed by Davis et al. (2005).

Study 2

Method

Design

A between-subjects experimental design was used with the interview technique as the independent variable with two levels: (1) cognitive interview with a motivated recall instruction (CIMR), and (2) cognitive interview with an open depth instruction (CIOD).

Participants

Forty psychology students (33 women) at the University of Toulouse 2 (France), participated in the study; they were all volunteers and received no incentives. The mean age was 24.42 ($SD = 6.23$) ranging from 18 to 46 years.

Material

The stimulus material was the same as in Study 1.
Interview conditions

The first author and the third author, both trained in investigative interview techniques (for description of the training, see Study 1), conducted the interviews. The interviewers followed a strict protocol (verbatim) according to the conditions. The structure of the two interview conditions was the same for the two conditions, and the protocol was the same as in Study 1.

Cognitive interviews (CIMR and CIOD). For the first free recall in both conditions, the interviewer instructed the interviewee to report everything and helped the interviewee to mentally reinstate the environmental and person-related context surrounding the to be remembered event (see Appendix 1). For the second free recall in the CIMR condition, the interviewer gave a motivated recall (MR) instruction (verbatim): 'That's good, we have a lot of information about this event. I'm going to give you another instruction which is very useful for enhancing memory. It is important that you maintain your concentration. It has been shown that doing another recall is very useful for enhancing memory. Therefore, I would like you to tell me about the event a second time. The goal is still to get the maximum information'. For the second free recall in the CIOD, the interviewer gave the same open depth (OD) instruction (verbatim) as in Study 1.

Procedure

The participants were recruited in the corridor of the psychology department at the University of Toulouse 2 (France). They were brought to a room where they were informed that they would watch a short video. They were placed in front of a computer screen (13 inches) and asked to click on play when ready, so that each participant watched the film individually. The participants were asked to be very attentive and to watch the film as if they were the cameraman. After viewing the film, they were given a filler task consisting of associating letters to numbers following the code described at the top of the sheet. After the three-minutes filler task, they were taken to another room where another experimenter interviewed them with one of the two interview conditions (CIMR vs. CIOD). The interviews were recorded for later scoring.

Scoring

The same method of scoring was used as in Study 1. As in Study 1, the number of confabulations was so low that we decided to include them as incorrect items. Eight interviews (20%) were selected at random and were scored separately by two different judges. Inter-rater agreement was calculated with Pearson's coefficient on correct, incorrect and repeated information. The inter-rater agreements reached a significant level, \( r(8) = .94, \ p < .001 \) for correct information, \( r(8) = .71, \ p = .05 \) for incorrect information, and \( r(8) = .95, \ p < .001 \) for repeated information. Consequently, the first author used the same coding for the other 32 interviews.
Results

A series of one-way ANOVAs (for duration, correct items, incorrect items, accuracy, redundancy rate and ratio cost-for-profit) was conducted, examining the between-subjects factor of type of interview (CIMR and CIOD).

Overall performance

No significant difference was found between conditions for time duration. More correct items were recalled with the CIOD ($M = 36.55$) than with the CIMR ($M = 32.35$), but the difference was not significant, $F(1, 38) < 1$, ns. There was also no significant difference between the CIOD ($M = 2.65$) and the CIMR ($M = 1.95$) conditions for the number of incorrect items recalled, $F(1, 38) = 1.30$, ns. No significant difference was found between the CIOD ($M = 92$) condition and the CIMR condition ($M = 93$) for accuracy rate, $F(1, 38) < 1$, ns.

Efficacy of the mnemonics for the second recall attempt

The means and standard deviations for the first (see Note 4) and second recalls are shown in Table 3. The OD ($M = 12.95$) instruction elicited significantly more new correct items than the MR ($M = 7.80$) instruction, $F(1, 39) = 7.78$, $p = .008$, $\eta^2 = .17$. No significant differences were found across interview conditions for the number of new incorrect items, $F(1, 39) = 3.83$, $p = .058$ and for accuracy rate, $F(1, 39) = 1.82$, $p = .186$.

After considering the categories of information separately (person, action and surroundings), the OD ($M = 4.95$) instruction elicited significantly more new correct items related to surroundings than the MR ($M = 1.65$) instruction, $F(1, 39) = 8.74$, $p = .005$, $\eta^2 = .19$. The OD ($M = 4.95$) instruction also elicited significantly more new correct items related to actions than the MR ($M = 2.50$) instruction, $F(1, 39) = 4.97$, $p = .032$, $\eta^2 = .12$. However, the OD ($M = 1.10$) instruction also

Table 3. Means and standard deviations for correct, incorrect, accuracy and interview duration for CIMR ($N = 20$) and CIOD ($N = 20$) conditions, according to recall attempt, Study 2.

<table>
<thead>
<tr>
<th>Variable</th>
<th>CIMR</th>
<th>CIOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Correct – First recall</td>
<td>24.45</td>
<td>23.60</td>
</tr>
<tr>
<td>Correct New – Second recall</td>
<td>7.80</td>
<td>12.95</td>
</tr>
<tr>
<td>Correct – Total recall</td>
<td>32.25</td>
<td>36.55</td>
</tr>
<tr>
<td>Incorrect – First recall</td>
<td>1.40</td>
<td>1.30</td>
</tr>
<tr>
<td>Incorrect New – Second recall</td>
<td>0.55</td>
<td>1.35</td>
</tr>
<tr>
<td>Correct – Total recall</td>
<td>1.95</td>
<td>2.65</td>
</tr>
<tr>
<td>Accuracy – First recall (%)</td>
<td>93.28</td>
<td>94.36</td>
</tr>
<tr>
<td>Accuracy New – Second recall (%)</td>
<td>95.63</td>
<td>91.91</td>
</tr>
<tr>
<td>Accuracy – Total recall</td>
<td>93.52</td>
<td>93.04</td>
</tr>
<tr>
<td>Interview duration (min)</td>
<td>7.41</td>
<td>8.12</td>
</tr>
</tbody>
</table>
elicited significantly more new incorrect items related to persons than the MR ($M = 0.35$) instruction, $F(1, 39) = 4.08$, $p = .05$, $\eta^2 = .10$, which did affect the accuracy rate associated with items related to persons, $F(1, 39) = 6.91$, $p = .012$, $\eta^2 = .15$ ($M_{OD} = .85$ and $M_{MR} = .96$).

**Indicators of repetition**

The means and standard deviations for the indicators of repetition are shown in Table 4. The redundancy rate was lower with the OD ($M = .63$) instruction than with the MR ($M = .71$) instruction, but the difference was non-significant, $F(1, 39) = 2.09$, $p = .156$. The ratio cost-for-profit was significantly lower with the OD instruction than with the MR instruction, $F(1, 39) = 8.69$, $p = .005$, $\eta^2 = .19$. In order to obtain one new item of information, the interviewer had to listen to 1.45 items of repeated information with the OD instruction against 2.57 with the MR instruction.

**Discussion**

Despite the fact that the OD stimulated the recall of more additional information than the MR, this superiority could not be observed on the whole interview. A possible explanation for this might be due to the short delay between watching the video and the interview, which generated a large volume of information recalled during the first recall and did not permit us to observe a significant difference on the whole interview. Nevertheless, the results of Study 2 indicate that the OD instruction is more efficient than a MR instruction. The OD instruction generates various types of information (i.e., information about surroundings, actions and persons). Moreover, the OD produces less repeated information while obtaining new information than a MR; thus it generates additional information at a lower expense. Asking the witness to recall his/her testimony again generates the restitution of new information, and these results show that it is possible to increase this amount of new information without repeating too many items of information. It is important to lead the witness to deepen her/his testimony concerning all types of details, and this can be done with the OD instruction. Thus, the OD instruction generates a reminiscence phenomenon (viz., new information, Turtle & Yuille, 1994) superior to the one generated by a

<table>
<thead>
<tr>
<th>Variable</th>
<th>CIMR</th>
<th>SD</th>
<th>CIOD</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total information – First recall</td>
<td>25.85</td>
<td>10.56</td>
<td>24.90</td>
<td>8.28</td>
</tr>
<tr>
<td>Total new information – Second recall</td>
<td>8.35</td>
<td>4.50</td>
<td>14.30</td>
<td>8.13</td>
</tr>
<tr>
<td>Repeated information – Second recall</td>
<td>18.25</td>
<td>8.16</td>
<td>15.65</td>
<td>7.79</td>
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<tr>
<td>Redundancy rate</td>
<td>.71</td>
<td>.17</td>
<td>.63</td>
<td>.19</td>
</tr>
<tr>
<td>Ratio cost-for-profit</td>
<td>2.57</td>
<td>1.40</td>
<td>1.45</td>
<td>0.98</td>
</tr>
</tbody>
</table>

Table 4. Measures related to repetition for CIMR ($N = 20$) and CIOD ($N = 20$) conditions, Study 2.
motivational effect. Consequently, the OD instruction is of particular interest as an additional instruction for the CI.

General discussion
This paper tests the efficiency of a new instruction, the open depth instruction. The aim of the OD instruction is to introduce an additional free recall with a specific recall strategy. We compared it to two different retrieval instructions, that is, the change of perspective instruction (Study 1) and the motivated recall instruction (Study 2). This research also aimed at assessing the cost and benefit associated with an additional recall attempt. Therefore, both studies examined several indicators using repeated information.

Can the open depth instruction be an efficient additional instruction?
The open depth instruction elicited more ‘new’ correct units of information pertaining to surroundings or actions than the change of perspective instruction or a motivated recall. This suggests that this new instruction stimulates the recall of various types of information. These results could be explained by several factors. It is possible that the interviewee may be more motivated by the OD instruction. The results of the second study in which the OD was more efficient than the MR support this explanation. Furthermore, the OD instruction may offer the interviewee specific retrieval strategies that enhance memory recollection (following the principles of Tulving’s encoding specificity, 1974). For example, the interviewee focuses her/his attention on all the aspects s/he did not report during the first recall while continuing to give details about what was already mentioned and s/he can use self-generated images. Moreover, the OD relies on a clear and an explicit formulation, as is the case for the report everything instruction (Boon & Noon, 1994) and for the focused attention instruction (Clifford & George, 1996), thus facilitating the reporting of new pieces of information.

However, in the second study, the accuracy rate of the additional information pertaining to the description of person was lower for the OD instruction than for the MR instruction. In previous studies, some authors have already observed an increase in the amount of incorrect information about persons with the CI (Hernandez-Fernaud & Alonso-Quecuty, 1997; Memon et al., 1994). This can be explained by the fact that this instruction leads interviewees to lower their own personal requirement for accuracy (Koriat, Goldsmith, & Pansky, 2000) and thus leads them to give less accurate details. Future studies should focus on the effect of this instruction on the description of persons.

Efficiency measures linked to repetition
We aimed to evaluate the cost and benefit associated with a second recall attempt by measuring its redundancy and the proportion of new information versus repeated information (viz., the ratio cost-for-profit). The use of multiple retrievals makes it
possible to obtain additional information but it also leads to the recall of information already recalled during the previous retrieval.

The more the recall strategy used in the additional retrieval is similar to the one used in the previous retrieval, the more the information is redundant. Witnesses recall nearly all of the information previously restituted with simple ‘recall again’ types of instructions (viz., as in the control group or with the MR instruction). This result is important since it is known that in a real investigation context, police officers probably use a structured interview more often, rather than fully applying the cognitive interview. In such cases, we could suppose that the perceived efficiency of an additional recall would not be very high, and this may explain why some police officers do not systematically use multiple retrievals. The proportion of repeated information drops slightly with the OD instruction. The witness uses repetition to structure the recollection of new information. Redundancy is the lowest with the CP instruction and can be explained by the fact that the retrieval strategy used with the CP is totally different from the one used during the first recall attempt.

Thus, the degree of retrieval similitude between the two recall attempts explains the redundancy observed with each strategy. Moreover, the ‘level of constraint’ generated by each retrieval strategy can explain the results in terms of the ratio between repeated and new information (viz., ratio cost-for-profit). Despite a low volume of repeated information and the low volume of new information obtained with the CP instruction, the interviewer had to listen to three times as much repeated information to obtain (one) new information compared to the OD instruction. The CP instruction probably led the interviewee in an overly specific way when doing the additional retrieval, thereby restricting his/her possibility to generate more details. With the other instructions (viz., FR, MR and OD), the interviewee is not as constrained. But among these instructions, the OD gives better cues to the witness to access and to restitute additional details. Consequently, the OD can be an interesting additional instruction for an investigator focused on ‘efficiency’ who probably reasons from a ‘value for money’ perspective.

**Limitations of the present studies**

A number of limitations need to be considered. The lower efficiency and the lower redundancy of the CP instruction could be explained by the formulation used in our study. The eyewitnesses could use the first person if they wanted to, however, this possibility was not proposed by Fisher & Geiselman (1992). It is possible that the use of the first person led the witness to be more self-centered and then reduced the potential effect of this instruction. Thus, it would be interesting to compare the OD instruction with the original change of perspective instruction (viz., omitting the use of the first person). Moreover, as noted in both studies, the duration of the interviews was very short. This could be due to the fact that we did not include a witness compatible questioning phase since our primary interest was the effect of the OD on the amount of additional information recalled in the second free recall attempt. It might be of interest to further test the OD in a full interview protocol that includes such a phase. But it could also be explained by the material used which consisted of a very short event that lasted 30 seconds (as in Davis et al., 2005). The material used raises other questions. In our study, the OD instruction proved to be an efficient instruction for a very short event. It would be interesting to assess the effects of this
new instruction with a longer and more complex scene since research has shown that the effects of the cognitive interview are even more observable in such a situation (Bekerian & Dennett, 1993; Geiselman, Fisher, MacKinnon, & Holland, 1985; Köhnken et al., 1999; Py, Ginet, Desperies, & Cathey, 1997). Furthermore, using events in which the dialog is audible would allow us to examine if the OD instruction is helpful in obtaining verbatim reports.

Conclusion and future prospects

In keeping with the results of Marsh, Tversky, & Hutson (2005), this research shows that the type of instruction proposed affects the content and the structure of recall differently. Our results are also important because of their practical implications. First, the OD instruction provides various and numerous types of information. This instruction should be interesting for police officers during the preliminary stage (first auditions in a judicial case) and for magistrates (viz., in an inquisitorial system) during the instruction stage, as different types of information could lead to many pieces of evidence in a judicial case. Second, both studies demonstrated that it is not necessary to repeat all of the information which had been recalled earlier in order to obtain a large amount of new information. However, we cannot conclude that repetition is unnecessary. Based on personal observations of many interview training sessions of police officers, it seems to us that trying to complete the first recall is not effective and that a minimum of repeated information is needed to obtain additional information. Indeed it seems necessary to recall the actions as they help to structure the testimony. This assumption has never been tested and it could be the object of future studies. Third, the OD instruction generated new information with a lower proportion of repeated information. The structure of the testimony is an important point to take into account as the listener is very sensitive to this aspect (Allison, Brimacombe, Hunter, & Kadlec, 2006). Futures studies should assess if police officers perceive the OD instruction efficient and useful. Moreover, in order to validate the new measures as indicators predicting the usability of a technique, it would be interesting to measure the correlation of the measure presented to the perceived efficiency and utility of various techniques. Furthermore, repetition measures will be interesting in research about judges’ perception of testimonies, especially in cases where the interview is presented as evidence in chief.

These two studies provide encouraging results for a new instruction – the open depth instruction – that could serve as an additional mnemonic instruction in the cognitive interview. This instruction offers the possibility to: (1) obtain new pieces of accurate information, (2) get various types of information, (3) minimize the intervention of the interviewer during the recall attempt, and particularly (4) obtain new pieces of information at a low cost with respect to repeated information. Further studies in the laboratory and with justice professionals are needed to fully validate the integration of this instruction in a full interview protocol.

Acknowledgements

This paper is an extract of Maïté Brunel’s unpublished doctoral dissertation conducted at the Université Toulouse 2, France, under the supervision of the second author. The third author participated in the conduct, the analysis and the interpretation of Study 2. This research was
also presented at the 2010 European Association of Psychology and Law Conference in Gothenburg, Sweden.

Notes
1. What is commonly called ‘standard’ police interview is the interview technique usually used by police officers. The ‘structured’ interview includes the social facilitative techniques of the cognitive interview minus the mnemonic components (Köhnken, Thurer, & Zoberbier, 1994).
2. Following the recommendation of two reviewers, we decided to change the original name of this instruction, the ‘peripheral focus’ instruction, to the ‘open depth’ instruction.
3. A variation of this instruction was recently tested: the guided peripheral focus instruction (Colomb & Ginet, 2011).
4. The OD instruction was principally thought to be used to generate an additional free recall during the same interview session. Although we could conceive a case where the witness had been previously interviewed thus, as a reviewer pointed out, it would also be possible to use this instruction for the first recall of an additional interview session.
5. The abbreviations CICP, CIOD and SI are used when referring to the whole interview. CP, OD and FR are used only when referring to each instruction separately.
6. Additional dependent variables were analyzed such as the novelty rate, the repetition rate, the exertion rate and the surplus rate; for a description and results see Brunel (2009).
7. As the pattern of results for the first recall attempt was similar to the results of the overall interview, they have not been presented but they can be obtained by contacting the second author.
8. The abbreviations CIMR and CIOD are used when referring to the whole interview. MR and OD are used only when referring to each instruction separately.

References


Appendix 1: Report everything and mental reinstatement of context instructions for the CICP and CIOD interview conditions

We would like to collect the maximum information concerning the video you watched x days ago. I will not start the audition by asking you questions, I would rather listen to you tell me what you saw. I will help you in this task by suggesting various techniques which should help you to remember. We have noticed that eyewitnesses withhold information because they think they are only minor details, but sometimes these details are really important for the rest of the investigation. Therefore, the first technique I will suggest consists in telling me the maximum of details, tell me everything, even the details you think are not important and even those you
are not sure about, but do not try to guess. Try instead to tell me all the things that come to your mind, try to be as complete as possible, tell me about the action, the people, the objects and the environment. As an investigator, I’m interested in everything you can tell me, whatever the type of detail. But before telling me what you saw x days ago, I am going to ask you to do a mental exercise which will help you to remember as many details as you can. As I talk to you, I would like you to think about each of the things I say, as I say them. You can close your eyes if you want. First, would you please remember where the scene took place ... remember the luminosity of the location. If some people were with you, try to remember them. Remember the sounds ... odors. Remember your physical feelings ... remember the mood you were in. Remember your reaction while watching the scene. Now when you think you are ready, tell me everything you saw’.

Appendix 2: Instructions for the SI interview condition

First recall

‘We would like to collect the maximum information concerning the video you watched x days ago. I will not start the audition by asking you questions, I would rather listen to you tell me what you saw. I will help you in this task by suggesting various techniques which should help you to remember. Now, I will ask you to tell me what you saw, try to be as complete as possible’.

Second recall

‘That’s good! We have a lot of information about the event. I’m going to give another instruction which should help you to remember more details. It has been shown that doing an additional recall is very useful for enhancing memory. Therefore, I would like you to describe a second time what you saw, try to be very precise and complete’.