Collaborative interviewing of eyewitnesses: a field study

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Abstract

Purpose – *When eyewitnesses talk to each other after witnessing a crime, they can contaminate each other's memory. However, laboratory research shows that collaborative interviewing can also result in correction of mistakes and retrieval of more new information. The aim of this study is to examine whether these laboratory findings would generalise to real police interviews in The Netherlands. Because little is known about which interviewing techniques Dutch police detectives use, the secondary aim was to examine how Dutch detectives approach individual and collaborative eyewitness interviews.*

Design/methodology/approach – *In a field study, witnesses of serious incidents (e.g. police shooting) were interviewed individually and then collaboratively by real investigators, resulting in 15 interviews of 1–2 h each from five witness pairs (5,534 details in total). Transcripts were coded for detail type, forensic relevance, verifiability, retrieval strategies and interviewing techniques. Results were described using both quantitative descriptive data and a qualitative analysis of interview excerpts.*

Findings – *On average, collaborative interviews resulted in 131 new details, over half of which were considered highly relevant to the police investigation. Interview excerpts demonstrated how content-focused retrieval strategies (acknowledgements, repetitions, restatements, elaborations) can elicit new and highly relevant details. Interviewers mostly asked clarifying questions and equal numbers of open, closed and yes/no questions, but rarely allowed for uninterrupted free recall. Interviewers asked a higher proportion of open questions during collaborative interviews than during individual interviews.*

Research limitations/implications – *Limitations included the small sample size and lack of a control condition.*

Originality/value – *To the best of the authors' knowledge, this paper is the first to investigate the effectiveness and feasibility of the Collaborative Eyewitness Interview in real-world settings.*

Keywords *Collaboration, Interviewing, Cross-cuing, Error pruning, Eyewitness memory, Retrieval strategy*

Paper type *Research paper*

Investigative interviewing is a non-coercive approach used to gather information from witnesses, victims or suspects, involving techniques such as open-ended questioning and rapport-building to ensure the accuracy and reliability of testimony (Milne and Bull, 1999). Investigative interviewers are generally advised to prevent eyewitnesses from talking to each other, because this can lead to them incorporating each other's mistakes or reporting information heard from a co-witness as their own memories. The seminal studies on social contagion (Meade and Roediger, 2002; Meade *et al.*, 2023) and memory conformity (Gabbert *et al.*, 2006; Gabbert and Wheeler, 2017) have been invaluable in highlighting the potential risks of co-witness discussion. Yet, the design of these studies did not allow for potential benefits of co-witness discussion to emerge, even though such benefits might be expected based on Wegner's transactive memory theory.

Wegner's (1987, 1995) theory on transactive memory explains how group memory works by dividing the responsibility of remembering information among its members. In a group, each person remembers different pieces of information, creating a shared memory system. This means that instead of everyone trying to remember everything, each person focuses

on certain details and relies on others for the rest. This collective system makes the group more effective at storing, retrieving and using information than if each person worked alone. Transactive memory operates based on two key conditions: firstly, members of the group possess unique pieces of information that others lack (differentiation). Secondly, a shared pool of knowledge exists among group members (integration). For example, aware of his sister's expertise in making movies, a brother prompts his sister to provide technical details while he describes the plot, enriching their collective memory of the film. In legal contexts, this theory suggests that eyewitnesses to an event might each recall different aspects of what occurred, forming a more complete picture when talking about their memories, thus highlighting the potential benefits of collaborative recall in investigative procedures.

To measure not only the potential risks but also the potential benefits of co-witness discussion, Vredeveldt and colleagues conducted a series of experiments on collaborative recall by eyewitnesses (Vredeveldt *et al.*, 2016, 2017b, 2018; Vredeveldt and Van Koppen, 2018; Vredeveldt *et al.*, 2019). Specifically, they introduced the Collaborative Eyewitness Interview, which involves initially interviewing witnesses individually and then allowing them to discuss the event together during a second interview. This way, detectives and legal professionals can check the original source of a statement as opposed to informal and unmonitored discussion between witnesses. Vredeveldt *et al.* hypothesised that collaboration with a co-witness might help witnesses remove errors from their testimony (error pruning) and remember more information about the witnessed incident (cross-cuing). They found mixed support for their hypotheses.

Regarding error pruning, there was a clear benefit of collaboration across studies: eyewitnesses who are interviewed together are more accurate. Research shows that collaborative eyewitnesses make fewer mistakes compared to nominal pairs (i.e. two individuals who were interviewed separately; Vredeveldt *et al.*, 2016, 2017b; Vredeveldt and Van Koppen, 2018; Vredeveldt *et al.*, 2019; Rossi-Arnaud *et al.*, 2020). This difference was observed regardless of the level of acquaintance between pair members (Vredeveldt *et al.*, 2019). This error pruning effect may result from pair members directly correcting each other's mistakes but also from members censoring themselves during discussion. Error pruning has also been observed in basic memory studies using simple (e.g. words; Harris *et al.*, 2012; Harris *et al.*, 2013; Weigold *et al.*, 2014; Nie and Guo, 2023) and complex stimuli (e.g. film clip of an accident; Ross *et al.*, 2004; Ross *et al.*, 2008; Wessel *et al.*, 2015). Collaborative pairs also seem more resistant to suggestion, for example, by being less likely to give in to leading questions (Rossi-Arnaud *et al.*, 2019; Rossi-Arnaud *et al.*, 2020; Rossi-Arnaud *et al.*, 2021; Rossi-Arnaud *et al.*, 2023). More specifically, members of collaborative groups had similar tendencies to give in to leading questions but were more likely to be corrected by their collaborators during discussion (Rossi-Arnaud *et al.*, 2021).

Cross-cuing occurs when one person's statement cues another person's memory, making the latter recall new information that they would not have remembered independently. For example, Witness A mentioning a bicycle may prompt witness B to mention the colour of that bicycle. In Vredeveldt *et al.*'s studies (Vredeveldt *et al.*, 2016, 2017b, 2018; Vredeveldt and Van Koppen, 2018; Vredeveldt *et al.*, 2019), there was no evidence that eyewitnesses helped each other remember more information during the collaborative interview. However, Vredeveldt *et al.* (2017b, 2019) did find evidence for a delayed cross-cuing effect: compared to nominal pairs, pairs that previously collaborated recalled more new correct information during a third individual interview. This cross-cuing effect may not emerge during collaboration because collaborative pairs can trigger but also disrupt each other's retrieval processes (Basden *et al.*, 1997). So, collaborative pairs may add new information but also leave out or forget to mention certain details. This disruption is typically found in research using simple stimuli (e.g. words), showing that collaboration can lead to less reported information (i.e. collaborative inhibition; Basden *et al.*, 1997; Weldon and Bellinger, 1997; Barber *et al.*, 2015). However, studies on witness interviews have shown that

collaborative pairs actually recall comparable amounts of correct information to nominal pairs (Vredeveldt *et al.*, 2016, 2017b, 2019). Again, this result was found regardless of the level of acquaintance between pair members (Vredeveldt *et al.*, 2019).

Research findings indicate that collaborative pair members who actively listen to and elaborate on each other's statements remember more than those who do not use these strategies (Meade *et al.*, 2009; Harris *et al.*, 2011). During collaboration, pairs use different strategies to retrieve information from memory (Vredeveldt *et al.*, 2016). These retrieval strategies can focus on either the content (i.e. acknowledging, repeating, rephrasing and elaborating) or the process (i.e. correcting, explaining, cuing, referencing the relationship and expressing renewed remembering) of the discussion. Certain strategies, like repeating and elaborating, seem more effective for collaborative recall than other strategies, like correcting and disagreeing (Meade *et al.*, 2009; Harris *et al.*, 2018). In the context of eyewitnesses, those using content-focused strategies typically remember more details together than those using process-focused strategies, regardless of their level of acquaintance (Vredeveldt *et al.*, 2016, 2017b, 2018; Vredeveldt and Van Koppen, 2018; Vredeveldt *et al.*, 2019). Notably, researchers found no evidence that retrieval strategies are related to the accuracy of details.

Although the Collaborative Eyewitness Interview holds promise for investigative interviewers to obtain additional valuable information, its effectiveness in real-life investigations remains uncertain due to the limited ecological validity in laboratory studies. These studies often feature less emotional and stressful events (mock crime video vs actual incident) with less severe consequences when witnesses are incorrect. Moreover, interviews in experiments are typically shorter (5–10 min vs 1–2 h), and there is often minimal delay between the individual and collaborative interview, with the exception of two studies by (with the exception of two studies in which a more realistic delay of five to seven days was implemented; Vredeveldt *et al.*, 2016, 2019). Thus, the primary aim of the current study was to examine the Collaborative Eyewitness Interview in a field setting.

A secondary aim of the present study was to provide more insight into how investigative interviewers approach collaborative interviews and whether differences exist between individual and collaborative interviews in interview techniques, such as question types and interviewing behaviours. In The Netherlands, where our study was conducted, police detectives use the "Generiek Getuigenverhoor" (Van Amelsvoort and Rispens, 2017), akin to the PEACE-model and Cognitive Interview used in England and Wales (Horselenberg and Vredeveldt, 2024). Previous research has shown that Dutch interviewers hold misconceptions about episodic memory and factors influencing eyewitness testimony (e.g. memory is like a video recorder; Krix *et al.*, 2015; Odinot *et al.*, 2015), but little research has been conducted on how well Dutch interviewers adhere to interviewing guidelines in adult witness interviews (for a Dutch field study on child interviews, see Otgaar *et al.*, 2019). However, field studies from Canada and the USA have revealed that evidence-based recommendations are not always put into practice, as police investigators asked mostly closed-ended questions, often interrupted witnesses and rarely used productive interviewing techniques (Wright and Alison, 2004; Snook and Keating, 2011; Schreiber Compo *et al.*, 2012). Therefore, we assessed the types of questions interviewers asked and interviewing behaviours they used during the interviews.

Present study

The present study sought to extend laboratory findings on the Collaborative Eyewitness Interview to real investigative interviews with eyewitnesses in the field. The study was designed in 2017 and data collection started in 2018. Initially, six police and investigative services in The Netherlands expressed interest in participating. We planned to collect 25 collaborative interviews with 50 participants as a feasible number for quantitative statistical analyses. Unfortunately, obtaining collaborative interviews in practice proved difficult

because all the participating services struggled with insufficient capacity and time constraints. After two years of data collection, we collected only five collaborative pairs (i.e. 10 participants). Nevertheless, the collected individual and collaborative interviews were long and rich in detail (more than an hour on average, unlike the usual 5-min interviews in laboratory research). Therefore, we opted for a qualitative analysis of these interviews, supplemented by some quantitative descriptive details. Our research question focused on how collaborative eyewitness interviews compared to individual interviews in terms of the quantity and type of information recalled, interviewing techniques and retrieval strategies. We expected that the collaborative interview would result in new information compared to the individual interview and that pairs that used more content-focused strategies would remember more together than pairs that used more process-focused strategies.

Method

Participants

Our sample consisted of five pairs of witnesses ($n = 10$, five men and five women) with a mean age of 34.7 (SD = 11.1). All pairs were colleagues, working as police officers or ambulance staff in The Netherlands. The members of each pair witnessed the same serious incident. Two pairs of police officers ($n = 4$) each witnessed a different shooting during which a police officer shot a perpetrator. One pair of police officers and two pairs of ambulance staff ($n = 6$) witnessed the same crime scene of a suspected homicide. All eyewitnesses were interviewed as part of a real criminal investigation. We obtained permission from the Board of Prosecutors General (the board of the Public Prosecution Service) in The Netherlands to use police records for our study.

Procedure

Witnesses were first interviewed individually by one or two Dutch police detectives ($n = 14$; seven men, seven women). Subsequently, detectives decided whether to perform the Collaborative Eyewitness Interview. When more than two people witnessed the same incident, pairs were formed in consultation with the researchers. Because previous research found no differences in collaborative eyewitness recall between acquainted and unacquainted witnesses (Vredeveldt *et al.*, 2019), acquainted witnesses (i.e. direct colleagues) were interviewed together to optimise witnesses' comfort and facilitate interview scheduling. On average, there were 10.10 days between the incident and the first interview (SD = 7.14) and 72.10 days between the first and the second interview (SD = 30.22).

The interview model taught at the Dutch police academy consists of six steps:

1. obtain free recall and give the instruction to report everything;
2. determine viewing conditions;
3. determine topics for further questioning;
4. ask questions by topic;
5. ask additional questions; and
6. ask what information was received from third parties (Rispens and Van Der Sleen, 2016).

Interviewers were instructed to conduct the collaborative interview in a manner similar to the individual interview, asking the same types of questions. The only addition for the collaborative interviews was that interviewers were asked to instruct witnesses to work together to provide a complete overview of the incident and encourage witnesses to listen to and elaborate on each other's statements.[1] Collaborative interviews were conducted by two interviewers. Most participants were interviewed by new interviewers, except for three

participants who had encountered one interviewer previously in their individual interview. On average, individual interviews took 102 min (SD = 32.68) and collaborative interviews took 67.40 min (SD = 22.99). All interviews were audio-recorded, transcribed *verbatim* and pseudonymised. A practitioner involved in the study provided feedback on a draft version of this manuscript.

Data coding

Content coding. Interview transcripts were divided into separate details. For example, if a witness said *the perpetrator's black hat fell off his head when he lunged at the police officer*, this was divided into six details. Two independent coders coded each detail for type, forensic relevance and verifiability and, where possible, accuracy (see explanation below). Disagreements were resolved by discussion, leading to a final code that was used for analysis. Details that were mentioned twice or more by the same witness in the same interview (e.g. the same witness mentioned the suspect's black hat again) were only coded once. Because pairs witnessed different incidents, a general coding scheme was made for each type of incident (i.e. police shooting and potential homicide).

Type of detail. Each detail was coded for type: relating to persons (e.g. "he was wearing a hat"), actions (e.g. "they screamed"), objects (e.g. "the gun") or surroundings (e.g. "the school"). Interrater reliability was substantial ($\kappa = 0.76$, $p < 0.001$).

Forensic relevance. We consulted the police detectives assigned to each case about what information they deemed relevant for their specific case and the type of criminal investigation. For instance, for the police shooting, the goal was to determine whether the violence used by a police officer was justified. For the potential homicide, the goal was to identify new investigative leads. Using this input, we constructed two coding schemes for forensic relevance, rated on a three-point scale with 0 indicating no relevance, 1 indicating some relevance and 2 indicating high relevance (following Vredeveldt *et al.*, 2015). Specificity was also taken into account. For example, "I do not know how many people there were" was coded as not forensically relevant, whereas "I saw multiple people" was considered somewhat relevant and "I saw four people" highly relevant. Interrater reliability was substantial ($\kappa = 0.64$, $p < 0.001$).

Accuracy. In one case, the incident was recorded by multiple bystanders and a police officer wearing a bodycam. Based on these videos, a coding scheme for accuracy was constructed for that specific incident. Details were coded as incorrect, correct or not verifiable. Details that were coded as not verifiable included subjective details (e.g. thoughts, feelings or opinions) as well as details that were not visible or audible in the videos. Interrater reliability was substantial ($\kappa = 0.64$, $p < 0.001$).

Verifiability. For the remaining incidents, we were unable to code for accuracy but coded instead whether the reported details could potentially be verified by the police based on physical or digital documentation (e.g. police radio communication, phone calls, audio or video recordings, photos, medical documentation). In deception detection studies, verifiability typically also includes details that are carried out or witnessed by another identifiable person (Palena *et al.*, 2021), but in our study, this would include all details; therefore, we only coded for documentation. Non-verifiable details included everything that was not documented (e.g. most actions during the incident unless audio- or video-recorded) and subjective details (e.g. thoughts, feelings or opinions). Interrater reliability was substantial ($\kappa = 0.72$, $p < 0.001$) [2].

Retrieval strategy coding. Collaborative interviews were coded for 13 retrieval strategies identified in the coding scheme by Vredeveldt *et al.* (2019) and Vredeveldt and Van Koppen (2018). A description and example of each strategy can be found in Table 4. Two independent coders reviewed the transcripts to select and code statements related to

retrieval strategies. Overall inter-rater reliability was substantial ($\kappa = 0.76$, $p < 0.001$). Disagreements were resolved by discussion, leading to a final code that was used for analysis.

Interviewing techniques coding. Interviews (10 individual, five collaborative) were coded for interviewer behaviour (i.e. type of questions asked, positive and negative interviewing behaviours). Table 5 shows the descriptions of seven coded question types. The first five categories were derived from previous research on police interviewing (Wright and Alison, 2004; Snook and Keating, 2011). The sixth and seventh category were added because of our specific data set of repeated and collaborative interviews. The sixth category, questions about inconsistencies, addressed an inconsistency between statements of different witnesses or between multiple statements of the same witness. Types of inconsistencies included direct contradictions (e.g. "Witness A said she saw a black car, but Witness B said he saw a blue car. How is that possible?"), omissions (e.g. "You said you saw a car in the first interview, but have not mentioned it now. Why is that?") and commissions (e.g. "You say now you saw a car, but you did not mention this when we first interviewed you. Why is that?"). Omissions can also happen between two witnesses (e.g. "Witness A said she saw a black car, but Witness B did not mention any car. Why is that?"). The seventh category, checking with other witness, was only relevant in collaborative interviews.

Table 6 shows the descriptions of seven positive and five negative interviewer behaviours observed in the interviews. The initial coding scheme was based on the coding scheme of Schreiber Compo *et al.* (2012), which was subsequently adapted based on our data set. Positive behaviours included mnemonics used in the Cognitive Interview, which can increase the quantity and quality of eyewitness reports. Negative behaviours included behaviours that are generally seen as unproductive (Oleszkiewicz *et al.*, 2023) and do not facilitate complete and accurate memory retrieval.

Two independent coders selected and coded statements related to interviewing questions and behaviours. Inter-rater reliability was substantial ($\kappa = 0.70$, $p < 0.001$). Disagreements were resolved by discussion, leading to a final code that was used for analysis.

Results

Based on this field sample of Collaborative Eyewitness Interviews, we report descriptive data and qualitative observations. Because of our small sample, we did not conduct formal statistical tests. The anonymised data are available at https://osf.io/exj76/?view_only=26f450e3729b4c1c8b8e8f3564c33561

Recall per interview

In total, pairs mentioned 5,534 details about the witnessed incidents. For the recall analyses, we investigated pair performance per interview, in which only non-redundant details were counted. For instance, when one detail was mentioned by both members during the same interview (individual or collaborative), it was counted only once [3]. In total, pairs mentioned 2,757 non-redundant details. Details mentioned by at least one member during the individual interview and again during the collaborative interview (i.e. repeated details) were both coded to check the overlap between the individual and collaborative interview. In a few cases, where relevance or verifiability scores differed between participants or interviews, we used the highest score for our analysis of pair performance.

Type of detail. Table 1 contains the average number of details mentioned per type during the individual and collaborative interview and overall. Across both interviews, pairs mostly recalled action details (53.5%), then surrounding details (20.1%), then person details (18.0%) and then object details (8.5%).

Table 1 Mean number of details per type category reported per pair during the individual and collaborative interview and across both interviews (standard deviation in parentheses)

	Type of detail				
Interview	*Person*	*Action*	*Object*	*Surroundings*	*Total*
Individual	74.40 (15.67)	214.20 (64.24)	38.60 (17.84)	93.40 (35.71)	420.60 (126.84)
Collaborative	51.20 (35.80)	158.80 (156.15)	25.00 (13.42)	41.80 (33.75)	276.80 (234.86)
Overall	95.60 (33.62)	299.40 (153.14)	46.60 (21.46)	109.80 (50.38)	551.40 (244.20)

Source: Created by authors

Forensic relevance. Each detail was coded for forensic relevance (Table 2). Across both interviews, pairs mostly recalled highly relevant details (57.0%), followed by not relevant details (36.8%) and then somewhat relevant details (6.1%). There was a tendency for witnesses to recall relatively more highly relevant details in the collaborative interview (65.3%) than in the individual interview (58.5%).

Verifiability and accuracy. For all pairs, reported details were coded for verifiability (Table 3). Across both interviews, pairs mostly recalled non-verifiable details (75.3%).

For the one pair for which it was possible to check accuracy of details, we found that they were overwhelmingly accurate both in the individual interviews (129 correct details and only one incorrect detail) and in the collaborative interview (102 correct details and only two incorrect details).

New and omitted details

In the collaborative interview, pairs recalled 130.80 new details on average (i.e. not mentioned before by either member during the individual interview, but added during the collaborative interview) with a range of 42–394, which comprised 41.1% of all details

Table 2 Mean number of details per relevance category reported per pair during the individual and collaborative interview and across both interviews (standard deviation in parentheses)

	Forensic relevance			
Interview	*Not relevant*	*Somewhat relevant*	*Highly relevant*	*Total*
Individual	152.00 (64.94)	24.60 (8.33)	244.00 (75.52)	420.60 (126.84)
Collaborative	112.60 (160.38)	14.20 (9.86)	150.00 (66.08)	276.80 (234.86)
Overall	218.60 (164.33)	33.00 (12.35)	299.80 (92.74)	551.40 (244.20)

Source: Created by authors

Table 3 Mean number of (non-)verifiable details reported per pair during the individual and collaborative interview and across both interviews (standard deviation in parentheses)

	Verifiability		
Interview	*Not verifiable*	*Verifiable*	*Total*
Individual	304.00 (97.87)	116.60 (63.80)	420.60 (126.84)
Collaborative	195.40 (131.49)	80.80 (102.55)	276.80 (234.86)
Overall	404.60 (143.36)	146.80 (116.35)	551.40 (244.20)

Source: Created by authors

mentioned in the collaborative interview. Furthermore, pairs omitted 274.60 details on average (i.e. mentioned by at least one member during the individual interview, but not mentioned again during the collaborative interview), which comprised 65.5% of all details mentioned during the individual interviews. In other words, the amount of overlap between the individual and collaborative interviews was low. The collaborative interview generated a lot of information that was not covered in the individual interviews (and vice versa).

During the collaborative interview, pairs recalled mostly new action details (60.7%), then new person details (17.7%), then new surroundings details (13.9%) and then new object details (7.7%). Pairs omitted mostly action details (51.1%), then surroundings details (24.9%), then person details (16.6%) and then object details (7.4%). Thus, compared to the individual interview, witnesses provided relatively more new action details (60.7% vs 51.0%) and relatively fewer new surroundings details (13.9% vs 22.0%).

Of all new details, most details were highly relevant (56.9%), followed by not relevant (33.7%) and then somewhat relevant (9.4%). Interestingly, the pair that mentioned the most new details ($n = 394$) reported new details that were mostly irrelevant (66.0%). In contrast, the pair that reported the least new details ($n = 42$) reported mostly highly relevant details (71.4%).

Of all omitted details, most details were highly relevant (53.4%), then not relevant (39.5%) and then somewhat relevant (7.1%). On average, 73.5% of all irrelevant details mentioned during the individual interview were omitted. Similarly, 79.2% of all somewhat relevant details were omitted. In contrast, pairs omitted highly relevant details to a lesser extent, omitting only 59.2% of all highly relevant details mentioned in the individual interview.

Just like the details reported in the individual interview, the new details added during the collaborative interview were mostly non-verifiable details (86.0%). Witnesses also omitted mostly non-verifiable details (75.2%). When coding accuracy was possible, the pair was again overwhelmingly accurate, adding mostly new correct details (97.1%; 34 correct details out of 35).

Retrieval strategies

Table 4 shows the means and standard deviations for each type of retrieval strategy. Overall, pairs acknowledged each other's statements the most compared to all other strategies. Pairs also mostly used content-focused strategies (range of 84.4%–92.1%) compared to process-focused strategies. Inspection of the means revealed a potential trend in the data: pairs who used relatively more content-focused strategies (acknowledge, repeat, rephrase and elaborate) tended to recall more new details the collaborative interview. For example, 89.8% and 92.1% of the strategies used by Pairs A and B consisted of acknowledge, repeat, rephrase and elaborate and their collaborative interviews contained 394 and 98 new details, respectively. In contrast, Pair C used a somewhat lower percentage of content-focused strategies (84.4%) and their collaborative interview contained only 42 new details. Of course, it should be noted that these trends cannot lead to firm conclusions due to the small sample size in the present study.

To illustrate how content-focused strategies can result in new information, we provide three pseudonymized excerpts from the collaborative interview transcripts below. The first excerpt comes from a pair who witnessed a police shooting:

Interviewer: *Then comes block two, the situation on site. Can either of you share your experiences up to the first shots?*

W1[4]: *Okay, yeah well, I see then that eh. . .*

W2: *That's not a lot.*

Table 4 Retrieval strategies with descriptions and examples adapted from Vredeveldt *et al.* (2019), including mean (M), standard deviation (SD), and the minimum (min) and maximum (max) number of strategies per collaborative interview

Strategy	*Description and example*	*M*	*SD*	*Min*	*Max*	*% of total*
Successful cue	Cuing attempt (e.g. "What was he wearing?") that is followed by retrieval of information by the partner (e.g. "Jeans")	8.00	5.87	3	18	4.3
Failed cue	Cuing attempt (e.g. "What was he wearing?") that is not followed by retrieval of information by the partner (e.g. "I don't remember")	2.40	1.52	1	4	1.3
Acknowledgement	Indicating support for a partner's statement, such as "Yes"', "'Yeah"', "Hm hm" or "That's right"	93.60	71.79	23	213	46.2
Correction	Correcting a partner's statement (e.g. "No, it was yellow"), or questioning its accuracy (e.g. "That's not right")	4.60	3.58	2	9	2.5
Elaboration	Building on a partner's statement by providing additional information	59.00	36.85	22	118	31.7
Explanation	Explaining one's own statement to the partner (e.g. "He was the same height as me")	2.60	1.52	1	5	1.6
Repetition	Repeating a partner's statement verbatim	13.40	13.35	2	34	6.0
Restatement	Reformulating a partner's statement without changing the content (e.g. rephrasing "her gun" to "her weapon")	6.40	4.39	1	12	3.4
Renewed remembering	Indicating that a partner's statement triggers a memory (e.g. "Now I remember it again" or "Oh right!")	0.60	0.55	0	1	0.3
Positive references to relationship	Positive statement about the partner's or the pair's ability (e.g. "Well done' or 'We are a good team")	0.00	0.00	0	0	0.0
Negative references to relationship	Negative statement about the partner's or the pair's ability (e.g. "I can't believe you don't remember that")	0.20	0.45	0	1	0.1
Role division or nomination of expert	Dividing or organizing the retrieval task (e.g. "I'll start" or "You know more about this than I do")	1.40	1.14	0	3	0.9
Checking accuracy	Checking with the partner whether particular details are correct (e.g. "It was black, right?")	2.80	1.64	1	5	1.6
Total		195.00	136.19	58	420	100

Source: Descriptions and examples adapted from Vredeveldt *et al.* (2019)

W1: *Ivo was driving. Ivo stopped behind the person. That man. Then I'm looking around, is this allowed, is this possible and I block the road with our service vehicle.*

W2: *While driving I actually threw my door open.*

W1: *Yes. You went out pretty quickly indeed. And I was still focusing on parking the car and stuff. Actually, when I look up, they are already outside.*

In the above excerpt, the discussion between the two witnesses resulted in new highly relevant information. The interviewer asks the witnesses to talk about the situation on site. Witness 1 starts off describing their arrival ("I'm looking around [. . .] I block the road with our service vehicle"). Then, Witness 2 adds new relevant information ("While driving I actually threw my door open"). Witness 1 confirms, reformulates their partner's statement ("You went out pretty quickly indeed") and elaborates ("And I was still focusing on parking [. . .] they were already outside").

The second excerpt is from a pair who observed a potential homicide crime scene:

Interviewer: *And did she also eh. . . you were talking about certain blood in her face?*

W1: *Yes, near her nose, I believe.*

W2: *Yes.*

W1: *I'm not sure, can you also. . .?*

W2: *Yes, thought she fell front forward to the ground. Became unwell or something. Just wham.*

W1: *Yeah. Significantly swollen septum too, the nose.*

In this excerpt, the discussion also resulted in new information that was highly forensically relevant. The interviewer asks Witness 1 to elaborate on something they mentioned before ("you were talking about certain blood in her face?"). Witness 1 answers the question, which Witness 2 confirms ("yes"). Then, Witness 1 successfully cues their partner to answer the same question ("can you also…?"). Witness 2 acknowledges their question and adds relevant new information ("thought she fell front forward to the ground. Became unwell"). Witness 1 confirms their partner's statement and elaborates, also adding an important new detail ("Significantly swollen septum").

The third excerpt is from a different pair who observed the same crime scene:

W1: *But that person was really so st-, you could have known that she died.*

W2: *Yes.*

W1: *Yes.*

W2: *Yeah, she felt that stiff.*

W1: *Yeah, she was really stiff and cold.*

W2: *Cold. I still remember that as well. And after, yeah, then I kinda looked, sort off, away.*

In this final excerpt, Witness 1 talks about the body of the victim ("that person was really so st-, you could have known that she died."). Witness 2 acknowledges their statement ("Yes. […] Yeah") and adds new highly relevant information ("she felt that stiff"). Witness 1 confirms this elaboration ("Yeah"), repeats it ("she was really stiff") and adds another important detail ("and cold"). Then, Witness 2 repeats ("Cold") and confirms their addition ("I still remember that as well.").

Interviewer analysis

Table 5 shows the mean frequencies of interview questions. Interviewers mostly aimed to clarify information by asking questions or paraphrasing witnesses' stories. Interviewers asked equivalent numbers of open, closed and yes/no questions but fewer multiple-choice questions. Table 6 shows interviewer behaviours. On the positive side, interviewers used rapport-building and provided witnesses with a "don't know" option. On the negative side, interviewers barely used CI mnemonics such as uninterrupted free recall, visualization or context reinstatement and asked a substantial number of suggestive questions and multiple questions in a row.

Table 7 shows that interviewers tended to ask more questions during the individual interview than during the collaborative interview, which can be explained by the fact that individual interviews took longer. More interestingly, we observed a tendency for the collaborative interview to feature a greater percentage of open questions (23%) compared to the individual interview (14%). In contrast, interviewers tended to show more positive and fewer negative behaviours during the individual interview compared to the collaborative interview.

Discussion

To explore whether the Collaborative Eyewitness Interview could be a valuable addition to the investigative interviewer's toolbox, we conducted a field study with real police investigations about serious incidents. We analysed the information reported in ten individual and five collaborative interviews, both qualitatively and with descriptive statistics. Based on our findings, we conclude that the collaborative interview clearly had added value in this field sample, as it resulted in 131 new details on average, of which more than half were considered highly relevant for the police investigation (though the majority was non-

Table 5 Descriptions and examples of question types with mean (M), standard deviation (SD) and the minimum (min) and maximum (max)

Question type	*Description and example*	*M*	*SD*	*Min*	*Max*	*% of total*
Open question	Give the witness an opportunity to provide an elaborate answer (e.g. "What happened next?")	18.27	9.48	6	37	17.1
Closed question	Can only be answered with a short and specific answer (e.g. "Where were you at that moment?")	18.80	14.14	2	52	14.9
Yes/no question	Can only be answered with yes or no (e.g. "Did the perpetrator have a gun?")	18.07	10.61	3	37	15.5
Multiple-choice question	Give the witness several options to choose from (e.g. "Did you go left, right or straight?")	3.00	2.00	0	6	2.6
Clarifying question	Aim to clarify information in the form of a question or paraphrase (e.g. "If I understand correctly, you went over the victim at that moment?")	61.93	43.21	6	134	46.6
Questions about inconsistencies	Address an inconsistency between statements of two witnesses or between multiple statements of one witness	0.93	1.28	0	4	1.7
Checking with other witness	Questions that checked whether a witness agreed with or could elaborate upon the other witness' story (e.g. "What do you think about what he said?")	1.20	2.15	0	7	1.7
Total		122.20	63.40	32	249	100

Source: Created by authors

verifiable). Qualitative examples showed how new and highly relevant information could result from using content-focused strategies during the collaborative interview, such as acknowledging, elaborating, restating and rephrasing.

Recall in collaborative interviews in the field

One interesting and unexpected finding was that we found little overlap between the information reported in the individual and collaborative interview. This means that witnesses did not repeat much information they had mentioned before and reported many new details. One possible explanation for the lack of repeating information is that interviewers in three out of five collaborative interviews prioritised retrieving specific information and did not provide the opportunity for free recall. A second explanation is that witnesses were probably aware of what they had previously reported and, therefore, did not consider it necessary to again provide the same amount of detail. A third explanation is that witnesses had forgotten a lot of details because more than two months had passed since their individual interview. From a practical perspective, the most relevant finding is that witnesses mentioned a lot of new information during the collaborative interview. Our qualitative analysis shows that new information can result from the interaction between the two witnesses when they elaborate upon each other's contributions. Other times, interviewers asked a new question that prompted the witnesses to address a new topic.

Compared to a previous field study involving witness interviews about serious incidents (Vredeveldt *et al.*, 2015), witnesses mentioned a similar proportion of highly relevant information (57.0% vs 52.6%) but a higher proportion of irrelevant information (36.8% vs 6.7%). This may be due to the different purposes of the interviews: Whereas the interviews of the 2015 study had a clearly delineated focus (facial identification of the perpetrator),

Table 6 Descriptions and examples of positive and negative behaviours with mean (M), standard deviation (SD) and the minimum (min) and maximum (max)

Behaviour type		*Description and example*	*M*	*SD*	*Min*	*Max*	*% of total*
Positive	Option for free recall	Letting the witness tell their story without interrupting at the beginning of the interview (e.g. "Tell me your whole story from beginning to end".)	0.27	0.59	0	2	1.4
	Asking for details	Asking the witness to provide details (e.g. "Be as detailed as possible")	0.53	0.64	0	2	3.2
	"Don't know" option	Providing the option to say "I don't know" (e.g. "If you do not know the answer, then that's fine".)	2.07	1.53	0	5	14.7
	Context reinstatement	Asking the witness to mentally recall the environment (e.g. "Think back to that day. What was the weather like?")	0.07	0.26	0	1	0.3
	Visualisation	Asking the witness to mentally visualise the situation (e.g. "Close your eyes and picture the situation")	0.20	0.56	0	2	1.1
	Sketch	Asking the witness to make a drawing	1.27	0.70	0	2	9.6
	Building rapport	Building a relationship with the witness (e.g. "Thank you for being here today".)	3.33	3.62	0	15	21.4
Negative	Re-asking a question	Re-asking an answered question excluding questions that the witness did not hear or understand (e.g. "I still want to know what you can tell me about his clothing" after the witness already reported this)	0.60	0.83	0	3	4.4
	Multiple questions	Asking multiple questions in a row (e.g. "Where were you at that moment? What did the perpetrator look like?")	2.07	2.05	0	7	14.4
	Interrupting	Interrupting the witness during their story, causing them to lose their train of thought	1.07	1.16	0	3	7.1
	Distractions	Distractions during the interview (e.g. a phone goes off)	0.87	1.36	0	5	5.0
	Suggestive question	Directs the witness towards a certain answer (e.g. "You saw the knife, didn't you?") or contains assumptions or information that has not been mentioned by the witness before (e.g. "What did the gun look like?" when the witness did not mention a gun)	2.47	2.07	0	8	17.5
Total positive			7.73	5.39	2	24	51.6
Total negative			7.07	4.06	2	15	48.4
Total behaviours			14.80	8.45	5	35	100

Source: Created by authors

interviews in the current study focused on the event as a whole, and witnesses were not guided in what comprised relevant and irrelevant information.

Retrieval strategies

In collaborative interviews, pairs used mostly content-focused strategies, such as acknowledgments, repetitions, restatements and elaborations. Interestingly, pairs with the highest proportion of content-focused strategies also recalled more new details during the collaborative interview than pairs with the lowest proportion of content-focused strategies. Although this observed trend aligns with previous findings in laboratory research (Vredeveldt *et al.*, 2016, 2017b, 2018; Vredeveldt and Van Koppen, 2018; Vredeveldt *et al.*, 2019), due to our small sample we cannot draw firm conclusions from this observation. Research with larger sample sizes is needed to further examine this pattern.

Table 7 Mean (M) number of question types and interviewer behaviours during the individual and collaborative interview with standard deviation (SD) and the minimum (min) and maximum (max)

	Individual interview					*Collaborative interview*				
Type	*M*	*SD*	*Min*	*Max*	*% of total*	*M*	*SD*	*Min*	*Max*	*% of total*
Open question	19.30	8.49	8	34	14.3	16.20	12.03	6	37	22.7
Closed question	22.50	14.46	8	52	16.0	11.40	11.28	2	31	12.7
Yes/no question	23.20	8.57	9	37	18.3	7.80	5.59	3	17	10.0
Multiple-choice question	3.90	1.66	1	6	3.0	1.20	1.30	0	3	1.9
Clarifying question	73.60	43.22	25	134	48.2	38.60	36.21	6	100	43.3
Questions about inconsistencies	0.40	0.70	0	2	0.3	2.00	1.58	0	4	4.5
Checking with other witness	0.00	0.00	0	0	0.0	3.60	2.30	2	7	5.0
Total question type	142.90	54.27	82	249	100	80.80	65.00	32	195	100
Positive behaviours	9.10	6.01	3	24	54.7	5.00	2.55	2	9	45.5
Option for free recall	0.30	0.68	0	2	1.7	0.20	0.45	0	1	0.8
Asking for details	0.60	0.70	0	2	3.1	0.40	0.55	0	1	3.3
'Don't know' option	2.60	1.58	0	5	17.3	1.00	0.71	0	2	9.3
Context reinstatement	0.00	0.00	0	0	0.0	0.20	0.45	0	1	0.8
Visualization	0.20	0.63	0	2	0.7	0.20	0.45	0	1	2.0
Sketch	1.50	0.53	1	2	11.3	0.80	0.84	0	2	6.2
Building rapport	3.90	4.36	0	15	20.5	2.20	0.55	1	3	23.0
Negative behaviours	7.40	3.84	2	14	45.3	6.4	4.88	3	15	54.5
Re-asking a question	0.70	0.95	0	3	4.2	0.40	0.55	0	1	4.8
Multiple questions	2.10	1.73	0	5	14.4	2.00	2.83	0	7	14.3
Interrupting	1.10	1.10	0	3	6.9	1.00	1.41	0	3	7.7
Distractions	1.20	6.01	0	5	6.5	0.20	0.45	0	1	2.0
Suggestive question	2.30	2.26	0	8	13.4	2.80	1.79	1	5	25.7
Total behaviours	16.50	8.81	8	35	100	11.40	7.34	5	24	100

Source: Created by authors

In our field sample, partners elaborated on each other's contributions more often (31.7% of strategies) than what is typically observed in laboratory studies (6.5%–28.7% of strategies; Vredeveldt *et al.*, 2016, 2017b; Vredeveldt and Van Koppen, 2018; Vredeveldt *et al.*, 2019). Conversely, correction was observed less frequently in the field (2.5% of strategies) compared to previous laboratory research (ranging from 5.9% to 11.6%). In police culture, correcting and contradicting each other is generally not accepted (Crank, 2014; Princen, 2015; Vredeveldt *et al.*, 2018), and as three out of five witness pairs were police officers, this may explain why pairs were less likely to correct each other in our sample.

Interviewer analysis

Compared to previous archival and field research on investigative interviewing (for an overview, see Launay and Py, 2015), interviewers from our study asked a higher proportion of open-ended questions (17.1% vs a range of 5.8%–10.8%) and a lower proportion of specific questions (33.0% vs a range of 44.0%–90%; consisting of closed, yes/no and multiple-choice questions).[5] These differences may be explained by selection bias: the detectives who decided to participate in our study were working on major investigations in need of new investigative leads, making it worthwhile to try the Collaborative Eyewitness Interview. Major investigations may involve more experienced or better trained interviewers, who in turn may be more likely to ask open-ended questions. In addition, compared to the individual interview, interviewers tended to ask a higher proportion of open-ended questions during the collaborative interview, suggesting that interviewers leave more space for discussion during collaborative interviews.

In our field sample, interviewers rarely provided witnesses the opportunity for uninterrupted free recall, which is not in line with the PEACE-model (Milne *et al.*, 2007) nor with Dutch police interviewing guidelines (Van Amelsvoort and Rispens, 2017). They also made little

use of the widely recommended CI mnemonics, which are explained in the Dutch police interviewing manual. However, compared to a field study from the USA (Schreiber Compo *et al.*, 2012), interviewers showed a higher proportion of positive behaviours (48.9% vs 11.2%) and a lower proportion of negative behaviours (51.1% vs 88.8%).[6] Although these Dutch interviewers seem to use better interviewing techniques than Schreiber Compo *et al.*'s US sample, there is still ample room for improvement.

Limitations

Our results show that it can be valuable to conduct a Collaborative Eyewitness Interview even if investigators have already extensively interviewed the witnesses individually before. However, as mentioned before, our results should be interpreted with caution due to our small sample size. It should also be noted that the present study did not include a control condition with repeated individual interviews. Therefore, we cannot be certain that these benefits were due to the collaboration *per se*, as opposed to simply adding an extra interview. For instance, research shows that a second recall opportunity can benefit completeness and accuracy of witness reports (Dunning and Stern, 1992; Turtle and Yuille, 1994; Odinot *et al.*, 2013). Nonetheless, laboratory studies on the Collaborative Eyewitness Interview did include control conditions and showed that collaboration had additional benefits over an extra individual interview, such as eliciting more accurate information or more new details (Vredeveldt *et al.*, 2016, 2017b; Vredeveldt and Van Koppen, 2018; Vredeveldt *et al.*, 2019).

Another possible explanation for the emergence of new information during collaborative interviews in our study could be related to the extended delay between the individual and collaborative interviews, during which witnesses may have encountered new information. This new information could come from informal discussion with co-witnesses or exposure to news about the event. In criminal investigations, it is important for interviewers to ask whether a witness has discussed the event with others or received any information from external sources, a practice that is also part of the Dutch interviewing model. Furthermore, we recommend that police officers conduct the Collaborative Eyewitness Interview as soon as possible after the initial individual interview. Future research could explore the differences in collaborative recall performance after short and long delays, respectively.

In addition, our sample consisted of emergency service personnel, who may not be representative of the broader population of eyewitnesses. Previous research has shown some differences in the way police officers and civilians report about witnessed events (Vredeveldt and Van Koppen, 2016). Specifically, police officers tend to report more forensically relevant details than civilians do (Lindholm *et al.*, 1997; Vredeveldt *et al.*, 2017a). To our knowledge, no research has been conducted on the eyewitness performance of ambulance staff. However, using a similar rationale as for police officers, we may expect that ambulance personnel would report more medically relevant details than civilians.

Finally, a potential barrier for the practical implementation of the Collaborative Eyewitness Interview would be that it requires valuable time and resources, which is typically in short supply for investigative interviewers (as evident in our struggle to collect sufficient data). We therefore envisage that investigators would only decide to use the Collaborative Eyewitness Interview in investigations of serious crimes that are in dire need of new investigative leads. This could theoretically apply to any type of crime that involves multiple witnesses, but perhaps the most obvious are violent crimes witnessed in public spaces.

Conclusion

Based on this field study and the body of laboratory research, we suggest that investigative interviewers add the Collaborative Eyewitness Interview to their toolbox. This tool can be

used when two or more witnesses observed the same crime and individual interviews have not provided sufficient investigative leads, as it has the potential to generate a considerable amount of new, forensically relevant information. Thus, following individual interviews, collaboration between witnesses can have significant benefits for the police investigation.

Notes

1 Laboratory research suggests that such instructions are not effective in enhancing collaborative recall (Vredeveldt & Van Koppen, 2018), but that research had not been completed when we designed this field study.

2 For the case in which we coded accuracy, verifiability was coded afterwards and thus not double-coded.

3 For accuracy, we did code details twice when they differed (i.e., one witness is correct, the other is incorrect).

4 "W" indicates witness.

5 However, there has been some discussion in the literature on what constitutes an open question. For example, Wolters and Poletiek (2022) considered questions starting with 'how', 'when' or 'where' open, whereas Otgaar *et al.* (2019) did not. In our study, 'when' or 'where' questions were considered closed, because these questions are expected to result in a fairly short answer ('it was here').

6 Percentages were calculated using only the behavior categories that were coded in both articles.

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