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Remembering with a friend or a stranger: comparing acquainted and unacquainted pairs in collaborative eyewitness interviews

Annelies Vredeveldt, Sjoukje van Deuren and Peter J. van Koppen

Department of Criminal Law and Criminology, Faculty of Law, Vrije Universiteit Amsterdam, Amsterdam, The Netherlands

ABSTRACT

Previous findings show that collaborative interviews with pairs of eyewitnesses can result in more accurate testimony than individual interviews, and that partners remember more together if they acknowledge, repeat, rephrase and elaborate upon each other's contributions. In the present study, we investigated whether these findings differ for pairs of acquainted and unacquainted partners, respectively. Participants viewed a violent movie in the cinema and took part in three eyewitness interviews approximately five days later. The first and the last interview were always individual. The second interview was individual in the nominal condition ($N=22$ pairs), collaborative with a known partner in the acquainted condition ($N=21$ pairs), and collaborative with a stranger in the unacquainted condition ($N=20$ pairs). We replicated benefits of collaborative eyewitness interviews, in terms of error pruning as well as delayed cross-cuing. However, we found no significant differences between acquainted and unacquainted pairs, neither in recall performance nor in retrieval strategies during the collaborative interview. Regardless of acquaintance, pairs who elaborated upon each other's contributions during the collaborative interview, remembered more together. The findings are evaluated within the theoretical framework of transactive memory. Practical implications for investigative interviewers are discussed.

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In the past, police interviewers have been advised not to let witnesses talk to each other, because witnesses may contaminate each other's memory. Yet, recent insights suggest that a collaborative interview with two eyewitnesses can, under certain conditions, prove valuable for the police investigation and evidence collection (see e.g., Vredeveldt, Groen, Ampt, & van Koppen, 2017). One question that has not yet been answered, is whether collaborative interviews produce similar results for witnesses who know each other and witnesses who do not know each other. That question is interesting from a practical perspective – which witnesses should be interviewed together? – but also from a theoretical perspective – how does witnesses' prior relationship affect their collaborative memory processes? Previous studies on collaborative eyewitness recall have involved a range of relationships between witnesses, including unacquainted pairs (Vredeveldt & Van Koppen, 2018), reasonably acquainted pairs (Vredeveldt et al., 2017) and very well-acquainted pairs (Vredeveldt, Hildebrandt, & Van Koppen, 2016). The benefits of collaboration on recall performance were remarkably consistent across those distinct participant groups, but none of the studies involved a systematic comparison between acquainted and unacquainted pairs.

Intuitively, one might expect that remembering with someone you know is a different experience, and results in a different outcome, than remembering with a stranger. In the present study, we systematically compared the effect of a collaborative interview with pairs of acquainted witnesses (friends, romantic partners, or family members) and pairs of unacquainted witnesses, and compared those two conditions to a nominal control condition.

Transactive memory

Transactive memory theory entails that groups of two or more individuals should be able to remember more about an event than the sum of its members, provided that they use a shared system for encoding, storing and retrieving information (Wegner, 1987). The success of transactive memory systems depends on how well the group is able to recognise and make use of its members' specific domains of expertise (Moreland, Argote, & Krishnan, 1996; Wegner, 1987). That requires effective communication between group members which not only allows for members to determine who knows what, but also helps them to retrieve information from domain experts (Gómez & Ballard, 2011; Lewis, 2004; Peltokorpi &

CONTACT Annelies Vredeveldt  anneliesvredeveldt@gmail.com  Department of Criminal Law and Criminology, Faculty of Law, Vrije Universiteit Amsterdam, De Boelelaan 1105, 1081 HV Amsterdam, The Netherlands

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Hood, 2018). Effective communication can lead to joint interpretations of information that develop through collaborative remembering (Hollingshead & Brandon, 2003).

Because an effective transactive memory system requires in-depth knowledge of each other's domains of expertise and a solid communication between members, acquainted group members are expected to have a better transactive memory system than unacquainted members. To test that hypothesis, Wegner, Erber, and Raymond (1991) asked pairs of romantic partners and pairs of strangers to memorise lists of words relating to different domains of expertise (e.g., food, television, science). Some of the pairs in each group received instructions regarding who was responsible for remembering which categories, whereas other pairs received no instructions. When no instructions had been provided during the learning phase, acquainted pairs recalled more words together than unacquainted pairs. When responsibilities had been randomly assigned, however, unacquainted pairs outperformed acquainted pairs. Thus, it seems that a prior relationship between partners facilitates collaborative recall, but only if the partners can rely on a transactive memory system that is already in place (e.g., they both know that one partner is good at science, while the other knows a lot about food).

In a similar vein, Hollingshead (1998a) found that acquainted pairs recalled more words than unacquainted pairs only when partners were unable to communicate about their learning strategy. In contrast, unacquainted pairs outperformed acquainted pairs when partners were instructed to discuss their learning strategy. According to Hollingshead, the explicit discussion of learning strategies was counterproductive for partners who knew each other, because it led them to diverge from their implicit transactive memory system. Further, romantic partners recall more together than unacquainted partners when they are able to communicate face to face, but not when they communicate via a computer, because a computerised interaction does not allow them to rely on each other's non-verbal cues (Hollingshead, 1998b). Taken together, the findings on transactive memory show that acquainted pairs remember more words together than unacquainted pairs, provided that they can rely on their implicit shared memory system and non-verbal communication. Based on those findings, we predicted that acquainted partners in the present study, who were able to rely on their existing transactive memory system, would remember more together in collaborative interviews than unacquainted partners.

Collaborative recall

The research on transactive memory provides insight into differences between acquainted and unacquainted pairs, but does not involve a comparison of the output of the collaborative pair with the output of two individuals working alone (i.e., a nominal pair). In contrast, a comparison

between collaborative and nominal groups is standard practice in the collaborative recall literature (see Marion & Thorley, 2016, for a meta-analysis; and Rajaram & Pereira-Pasarin, 2010, for a theoretical overview). Consistent findings emerging from that literature indicate that collaborative groups remember less information *during* collaboration (i.e., collaborative inhibition), but more new information *after* collaboration (i.e., post-collaborative benefits), than nominal groups. Further, collaborative groups consistently report fewer incorrect details than nominal groups (i.e., error pruning).

People typically expect that talking to another person about an event that they experienced together, will trigger new memories. In cognitive psychology, that expectation is called the *cross-cuing hypothesis*. Researchers in the 1990s could, to their own surprise, not find any evidence for the existence of a cross-cuing effect in collaborative recall (Meudell, Hitch, & Boyle, 1995; Meudell, Hitch, & Kirby, 1992). Later research revealed that cross-cuing in collaborative recall does occur, but that its effects emerge only after collaboration (e.g., Blumen & Rajaram, 2008; Congleton & Rajaram, 2011; Takahashi & Saito, 2004; Vredeveldt et al., 2017). Thus, individuals may not report new memories during a collaborative interview, for example due to the disruption of individual retrieval strategies as a result of the discussion (Basden, Basden, Bryner, & Thomas, 1997), but they do report new memories after the collaborative interview. A potential mechanism underlying that finding is a combination of re-exposure and cross-cuing (Blumen, Young, & Rajaram, 2014). During the collaboration, individuals are re-exposed to information they had forgotten. When they repeat that information later in an individual interview, they often add new details of their own (i.e., delayed cross-cuing).

Several previous studies have compared collaborative recall performance in acquainted and unacquainted dyads. For example, experiments involving recall of simple stimuli showed that pairs of friends remembered more together than pairs of strangers (Andersson & Rönnberg, 1995, 1996). The researchers suspected that friends were able to more effectively cue each other's memory, which was confirmed by the results of a later experiment (Andersson & Rönnberg, 1997). Surprisingly, subsequent research did not consistently show the same benefits for married couples. Although two articles reported that married couples performed numerically better than unacquainted pairs on prospective and retrospective collaborative memory tasks (Browning, Harris, Van Bergen, Barnier, & Rendell, 2018; Dixon & Gould, 1998), married and unacquainted pairs were not compared within the same experiment in those studies. In contrast, in two direct comparisons, no significant differences were found between married couples and unacquainted pairs on prospective and retrospective memory tasks (Gould, Osborn, Krein, & Mortenson, 2002; Johansson, Andersson, & Rönnberg, 2000). Marion and Thorley (2016) conducted a meta-analysis to examine, amongst other questions,

whether acquaintance between group members affects collaborative recall performance (without distinguishing between groups of friends, spouses or classmates). The meta-analysis revealed that groups of strangers inhibited each other's recall more ($d = -0.77$) than groups of acquainted partners did ($d = -0.44$). Findings from the collaborative recall literature thus also support our prediction that acquainted pairs in the present study will recall more together than unacquainted pairs.

Memory conformity

When people discuss their memories, those memories start to look more alike – a phenomenon known as memory conformity (see Gabbert & Wheeler, 2018, for a recent overview). In the eyewitness memory literature, researchers have typically focused on the negative aspects of memory conformity. That is, individuals can contaminate each other's memory by adopting each other's errors (e.g., Gabbert, Memon, & Allan, 2003; Meade & Roediger, 2002; Wright, Memon, Skagerberg, & Gabbert, 2009). In contrast, the literature on collaborative recall has consistently highlighted the benefits of memory conformity, namely, individuals make fewer errors when they remember together than when they remember alone (i.e., error pruning, see e.g., Ross, Spencer, Linardatos, Lam, & Perunovic, 2004; Rossi-Arnaud, Spataro, Bhatia, & Cestari, 2019; Wessel, Zandstra, Hengeveld, & Moulds, 2015). Condon, Ritchie, and Igou (2015) refer to these two paradoxical effects as distortive and corrective memory conformity, respectively. Vredeveldt et al. (2017) found that witnesses were nearly twice as likely to prune each other's errors than to adopt each other's errors. That suggests that corrective memory conformity may be more prevalent in collaborative eyewitness interviews than distortive memory conformity (see also Wright & Villalba, 2012).

The type and degree of memory conformity observed may also depend on prior acquaintance between partners. Hope, Ost, Gabbert, Healey, and Lenton (2008) compared pairs of strangers, romantic partners and friends. Unbeknownst to the participants, each pair member watched a different version of a video. They subsequently engaged in a written free recall of the video with their co-witness (or alone). Afterwards, participants individually completed a cued-recall questionnaire with the instruction to report only what they had seen themselves. Participants who had collaborated with an acquainted partner (regardless of whether that was a friend or romantic partner) were approximately twice as likely to incorporate at least one item of misinformation obtained from their partner into their final individual recall than participants who had collaborated with an unacquainted partner. In a comparable study, French, Garry, and Mori (2008) similarly showed that romantic partners were significantly more likely to incorporate erroneous details from each other's reports into their own memory than unacquainted partners were. Taken together, it seems that acquainted partners

influence each other's memories to a greater extent than unacquainted partners do.

Relationship and retrieval strategies

Of course, whether partners know each other or not is not the only variable that matters. How well partners know each other and how long they have been acquainted may be more important. According to transactive memory theory, it takes time to develop an effective shared memory system (Tollefsen, 2006; Wegner, 1987). Yet, previous research has failed to find a significant association between the duration of the relationship between partners and collaborative recall performance (e.g., Vredeveldt et al., 2016; Vredeveldt, Kesteloo, & Van Koppen, 2018; Wegner et al., 1991). That is probably due to the fact that even partners who have been in a long-term relationship may never develop a successful transactive memory system, whereas other partners may develop one relatively quickly. Hence, "the presence of effective transactive memory systems cannot be assumed from length of relationship alone" (Harris, Barnier, Sutton, & Savage, 2018, p. 16).

Another factor that may influence collaborative recall performance is the quality of the relationship between partners. For example, self-reported levels of familiarity and trust between two partners (Condon et al., 2015), as well as likeability ratings of the partner (Hope et al., 2008), are associated with memory conformity in recall of a witnessed event, both in the negative sense (i.e., adopting each other's errors) and in the positive sense (i.e., pruning each other's errors). Browning et al. (2018) did not find a straightforward association between self-report ratings of relationship intimacy and collaborative recall performance in romantic couples (potentially due to ceiling effects), but did find that partners who disagreed on the degree of intimacy in their relationship performed more poorly on the collaborative recall task. Barnier et al. (2014) found that partners who reported having a more intimate relationship performed better on recall tasks, but this effect was observed for both individual and collaborative recall tasks. In sum, most studies do report some sort of association between relationship quality and collaborative remembering, but the findings are rather complex. We therefore did not have clear predictions regarding the association between self-rated relationship quality and collaborative recall performance in the present study.

Rather than using relationship duration or quality as a proxy for the presence of a transactive memory system, it may be better to measure transactive memory more directly, for example through self-report. Married couples who claim that they have a transactive memory, and are able to give examples of how it works in everyday life, have been found to perform better on prospective and retrospective collaborative recall tasks than couples who do not claim to have a transactive memory (Johansson et al.,

2000). Further, older married couples who self-report that they have a clear division of responsibility remember more of a short story together (Johansson, Andersson, & Rönnerberg, 2005). Finally, pairs of strangers who report trusting each other and having confidence in each other's contributions (i.e., who scored high on the Credibility subscale of the Transactive Memory System scale; Lewis, 2003) have been found to perform better on prospective collaborative memory tasks (Browning et al., 2018).

Other studies went beyond relying on self-report, by analysing the actual strategies used during collaborative recall (e.g., Harris et al., 2018; Harris, Keil, Sutton, Barnier, & McIlwain, 2011; Meade, Nokes, & Morrow, 2009; Vredeveldt et al., 2016). The recurring finding arising from these studies is that some couples facilitate each other's recall, whereas others inhibit each other's recall. There is great variability in the types of strategies used in collaborative recall, some of which are helpful (e.g., repeating and elaborating upon each other's contributions) whereas others are harmful (e.g., correcting each other and disagreeing about strategies). More specifically in the context of collaborative eyewitness interviews, strategies that focus on the content of the to-be-recalled material (acknowledging, repeating, rephrasing and elaborating upon each other's contributions) help pair members to remember more together, whereas strategies that focus on the process of remembering together (such as referring to the relationship, correcting each other, cuing attempts) do not facilitate collaborative recall (Vredeveldt et al., 2016, 2017; Vredeveldt & Van Koppen, 2018).

To our knowledge, only one previous study directly compared the types of strategies used by acquainted and unacquainted pairs in collaborative recall (Gould, Kurzman, & Dixon, 1994). The only significant difference between married couples and pairs of strangers that emerged was that spouses talked more about the task itself (e.g., discussions about strategy or performance) than strangers. We therefore expected to observe more process-focused retrieval strategies in collaborative interviews with acquainted pairs than with unacquainted pairs.

The present study

To recruit participants representative of the general population, we asked visitors of a movie in the cinema to participate in the research. All participants signed up together with an acquainted partner with whom they had seen the movie. On average five days after the movie, two pairs at a time arrived at the university. All participants were interviewed three times: the first and third interview were always individual and the second interview was determined based on experimental condition. Participants were randomly assigned to recall a movie scene either individually (nominal condition), with their own partner (acquainted condition), or with a person from another pair (unacquainted condition).

In line with the literature discussed above, we formulated the following hypotheses. Based on transactive memory theory and meta-analytic findings on collaborative recall, we predicted that acquainted pairs would remember more correct details overall than unacquainted pairs (*Hypothesis 1*). Further, based on previous findings of delayed cross-cuing after collaboration, we predicted that collaborative pairs (regardless of acquaintance) would report more new correct details in the final interview than nominal pairs (*Hypothesis 2*). With respect to incorrect recall, we expected to observe error pruning during collaborative recall (*Hypothesis 3*). Moreover, based on findings that acquainted partners tend to exert a greater influence on each other's memories than unacquainted partners, we hypothesised that error-pruning benefits would be particularly pronounced for acquainted pairs (*Hypothesis 3a*). With respect to features of the relationship, we did not expect to see an association between relationship duration and collaborative recall performance, in light of previous null findings (*Hypothesis 4*). We did not have clear predictions regarding the potential association between self-rated relationship quality and collaborative recall performance, given the conflicting findings in the literature. With regard to collaborative retrieval strategies, we hypothesised that acquainted pairs would use more process-focused strategies than unacquainted pairs (*Hypothesis 5*). In addition, we expected to replicate the positive association between content-focused strategies and collaborative recall output observed in previous research (*Hypothesis 6*).

Method

Participants and design

Power calculations were based on previous studies with similar experimental designs, which all showed large error pruning effects in the collaborative interview ($d > 1.00$; Vredeveldt et al., 2016, 2017; Vredeveldt & Van Koppen, 2018). A sample size of 20 pairs per condition (i.e., 60 pairs in total) would allow us to detect an effect of $d = 0.88$ with power = .80 at $\alpha = .05$. Prior to data collection, we specified the stopping rule that once 20 pairs had been reached for each condition, we would honour standing appointments and then terminate data collection. As a result, the experimental conditions contained between 20 and 22 pairs.

One (acquainted) participant pair was excluded from all analyses because they knew nothing about the movie scene. Our final sample contained 126 participants (71 male, 55 female) with a mean age of 34.14 years ($SD = 13.31$). The sample included 96 Dutch participants and 30 participants with a different nationality (predominantly British). Participants' self-reported level of education ranged from high school ($N = 8$), lower vocational education (Dutch MBO; $N = 10$), higher vocational education (Dutch HBO; $N = 40$), university ($N = 64$) to "other" ($N = 4$).

Participants arrived in pairs, and pairs were randomly assigned to one of three conditions: nominal ($N = 22$

pairs), collaborative with the person they had signed up with (acquainted; $N=21$ pairs) or collaborative with a person from another pair (unacquainted; $N=20$ pairs). The sample contained 27 male-female pairs, 22 male-male pairs, and 14 female-female pairs.¹ In the acquainted condition, 6 pairs indicated that they were friends, 8 good friends, 5 romantic partners and 2 family members. Partners in the acquainted condition had known each other for eight years on average ($M=7.96$, $SD=11.06$).

Materials

Participants were interviewed about a 7-minute violent scene from the movie *T2: Trainspotting*, a 2017 British comedy drama about crime and drugs (total movie duration: 1 hour and 57 minutes). Participants saw the movie in English with Dutch subtitles. In the selected scene, one man, Franco, chases another man, Mark, through a night club and on the street. The pursuit ends with a violent confrontation between the men in a parking garage. Mark tries to escape by jumping on the roof of a moving car. When the car with Mark on top of it passes by Franco, he stabs Mark in the arm with a knife.

A questionnaire was used to measure the quality of the relationship between partners who had signed up together. Participants individually rated the quality of their relationship. The questionnaire was constructed based on the Perceived Relationship Quality Components Inventory (Fletcher, Simpson, & Thomas, 2000) and the McGill Friendship questionnaire (Mendelson & Aboud, 1999). In the first two items on the questionnaire, participants were asked to indicate how long they had known their partner and to circle the type of relationship (colleague, acquaintance, friend, good friend, romantic partner, other: please specify). The next ten items were statements that measure constructs of satisfaction, trust, commitment and emotional support, which all seem to be key constituents of relationship quality (Fletcher et al., 2000). Participants were asked to rate the extent to which they agreed with statements such as “I trust my partner”, “I’m happy with the relationship between me and my partner” and “I cherish the relationship between me and my partner” on a 7-point Likert-scale ranging from 1 = totally disagree to 7 = totally agree. The ten-statement scale yielded high internal consistency ($\alpha = .94$).

Procedure

Participants were recruited in one of three Dutch cinemas: Pathé Haarlem, Pathé De Munt (Amsterdam) and Pathé City (Amsterdam). Pairs of visitors who had attended the movie *T2: Trainspotting* were invited to participate in a research project, which would require them to come to the university building about a week later to be interviewed about the movie. As an incentive to participate, individuals could choose either to get €10 each for their participation, or to enter in a competition to win a €100

voucher (chance of winning 1 out of 79). Pairs who signed up for the study provided their contact information and were contacted the next day by one of the researchers to plan the interview session.

Interview sessions took place approximately five days after the participants had seen the movie ($M=4.95$, $SD=2.23$).² Two pairs of participants at a time arrived at the university. Four research assistants were present to conduct the interviews.³ They were all trained by the first author and followed a detailed interview script. At the start of the session, participants signed an informed consent form. Next, they were interviewed three times about the scene. Interviews were conducted in Dutch or English, and all interviews were audio-recorded. All interviews were conducted according to the four-phase model used in police interviews in The Netherlands (Van Amelsvoort, Rispens, & Grolman, 2017). The first phase consisted of free recall, in which the participant was asked to remember as much as possible about the whole scene, without interruptions by the interviewer. In the second phase, the interviewer asked open-ended questions based on what the participant had said during the first phase. In the third phase, the participant was asked to describe all the characters in the selected scene. The interviewer asked scripted follow-up questions about the names, actions and physical descriptions of the persons mentioned by the participant. During the fourth and last phase, the participant was asked to describe the surroundings of the scene. After the description of the surroundings, the interviewer asked scripted follow-up questions about the setting, lighting and sounds during the scene.

The first interview was always conducted individually. Each participant was taken into a separate interview room by one of four interviewers. At the beginning of the first interview, the interviewer explained about which scene the participant would be interviewed, namely “the scene in which Francis Begbie encounters Mark Renton for the first time in twenty years, until the moment they split up again”. The researcher provided some hints if participants could not remember the specific scene.⁴ Once it was clear to the participant which scene they would be interviewed about, the four-phase interview started. At the end of the interview, the participant was taken to the waiting area, where the interviewer chatted with the participant for a few minutes (not about the movie) until everything was ready for the next interview.

The second interview was either individual again (nominal condition), collaborative with the partner with whom the participant had signed up (acquainted condition), or collaborative with a partner from the other pair that attended the same session (unacquainted condition). In both collaborative conditions, participants were given the following instructions: “Please work together to give a complete account of the scene. Try to help each other, so you can both remember as much as possible.” Participants were interviewed by an interviewer that they had not spoken to in the first interview. They were informed

that they would be asked to report about the same scene again, and that they should assume that the interviewer did not know what they had said in the first interview. The structure of the second interview was identical to the first. Thus, the questions were the same, except that the follow-up questions were again tailored to what participants had said during the free-recall phase.

The third interview was always conducted individually. All participants were interviewed by a new interviewer, to whom they had not spoken during the previous interviews.⁵ Participants were asked to describe for the last time the selected scene in as much detail as possible. Again, they were instructed to assume that the interviewer did not know what they had said in previous interviews. The final interview had the same structure as the previous two interviews.

At the end of the third interview, participants individually completed the relationship questionnaire and answered a few questions about their demographic background (age, gender, nationality). Participants were asked if they had talked with someone about the movie in general (84% of participants reported that they had), and about the specific scene about which they were interviewed (only 2% reported that they had). Finally, participants were debriefed and thanked for their participation. Each session took 60–90 minutes in total.

Content coding

To code the content of participants' reports, a coding scheme was constructed based on the selected movie scene. The final coding scheme consisted of 432 details

from the scene. All interviews were coded based on the audio-recorded interviews. For each interview, the coder indicated whether each of the 432 details was mentioned correctly (e.g., describing the garage as "multi-story"), incorrectly (e.g., describing it as "single-story"), both correctly and incorrectly (e.g., first describing it as "single-story" but later on in the interview referring to multiple stories), subjectively (e.g., describing it as "just a normal garage"), or not at all (i.e., no description of the garage).

Four research assistants coded the interviews. All interviews of 16 randomly selected pairs (i.e., 25% of the total sample; 41,568 data points) were independently double-coded by a second blind coder. Interrater reliability was substantial ($\kappa = .70$, $p < .001$; κ maximum = .99). The scores of the first coder were retained for the main analysis.

Retrieval strategy coding

Retrieval strategies used during collaborative interviews were coded based on verbatim transcripts of those interviews. We used the coding scheme proposed by Vredeveldt and Van Koppen (2018), which they adapted from Vredeveldt et al. (2016). Each statement in the transcript was coded as one of the 13 retrieval strategies in the coding scheme (see Table 1), or as "no strategy". For the strategy coding, all 41 collaborative interviews were coded by two independent coders (i.e., 13,453 data points). Overall interrater reliability was high ($\kappa = .73$, $p < .001$; κ maximum = .99). Once the coders had completed their independent coding, they discussed any differences and agreed upon a final code, which was used for the main analysis.

Table 1. Retrieval strategies during collaborative interviews, coded according to the coding scheme proposed by Vredeveldt and Van Koppen (2018). Means (*M*) and standard deviations (*SD*) for the frequency of each strategy per interview in the two collaborative conditions.

Strategy	Description and examples	Acquainted		Unacquainted	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Successful cue	Cuing attempt (e.g., "What did the car look like?") that is followed by retrieval of information by the partner (e.g., "Black").	8.57	4.79	9.10	2.81
Failed cue	Cuing attempt (e.g., "What did the car look like?") that is not followed by retrieval of information by the partner (e.g., "No clue").	5.38	3.09	6.45	4.32
Acknowledgement	Indicating support for a partner's statement, such as "Yes", "Yeah", "Hm hm", or "That's right".	63.95	27.00	73.70	26.55
Correction	Correcting a partner's statement (e.g., "No, it was blue"), or questioning its accuracy (e.g., "That's not right").	12.90	9.49	9.85	6.72
Elaboration	Building on a partner's statement by providing additional information, either countable (i.e., a new detail as classified in the content coding scheme) or non-countable (e.g., "it looked suspicious").	55.33	22.66	56.25	21.51
Explanation	Explaining one's own statement to the partner (e.g., "It was the same colour as my car").	10.90	6.44	9.50	4.36
Repetition	Repeating a partner's statement verbatim.	14.48	8.43	15.10	9.81
Restatement	Reformulating a partner's statement without changing the content (e.g., rephrasing "big car" to "large automobile").	5.38	4.10	6.05	4.22
Renewed remembering	Indicating that a partner's statement triggers a memory (e.g., "Now I remember it again" or "Oh right!").	3.86	2.37	4.90	3.23
Positive references to relationship ^a	Positive statement about the partner's or the pair's ability (e.g., "Well done" or "We are a good team").	0.81	1.12	0.35	0.67
Negative references to relationship ^a	Negative statement about the partner's or the pair's ability (e.g., "I can't believe you don't remember that" or "We clearly didn't pay much attention").	0.24	0.54	0.00	0.00
Role division	Dividing or organising the retrieval task (e.g., "You start" or "I'll jump in").	1.76	1.89	1.80	2.50
Checking accuracy	Checking with the partner whether particular details are correct (e.g., "It was black, right?").	7.52	4.80	5.60	2.85
<i>Total number of strategies</i>		<i>191.10</i>	<i>71.86</i>	<i>198.65</i>	<i>62.13</i>

Note: ^a Not included in analyses because it occurred less than once per interview on average.

Results

In dyadic data analysis, it is important to take potential non-independence between dyad members into account. Kenny, Kashy, and Cook (2006) recommend that researchers inspect partial intraclass correlations (pICC) for all dependent variables of interest, and if there is an indication of nonindependence for any of the variables (as indicated by a significance value below the liberal alpha criterion of .20), all analyses should be conducted on pair performance rather than individual performance. Because we found clear evidence of nonindependence between pair members (e.g., for incorrect recall in Interview 2, pICC: $r = .40$, $p < .001$), we conducted all analyses on pair performance. Pair performance is also most relevant from a practical perspective, because it reflects the total amount of non-redundant information that can be obtained from a pair of eyewitnesses. That is, if the same detail was reported by both pair members, it was counted only once. Details that were mentioned both correctly and incorrectly counted towards the number of correct details as well as the number of incorrect details. Subjective details did not count toward the number of correct or incorrect details and were not examined further. Before analysis, data assumptions were checked and where necessary, analyses were checked with transformed data (see detailed information in footnotes below), which confirmed all findings. All reported p -values are two-tailed. The data that support the findings of this study are openly available at <https://figshare.com/s/fce40d6cffb3b013bdb>.

Correct recall

Figure 1 shows the number of non-redundant correct details reported in each interview by pairs in the nominal, acquainted and unacquainted conditions (i.e., details that were repeated in multiple interviews were counted only the first time they were mentioned). Thus, performance at Interview 1 reflects baseline correct recall and performance at Interview 2 and 3, respectively, reflects new correct details that had not been mentioned by either pair member in a previous interview.

A 3 (Condition: nominal, acquainted, unacquainted) \times 3 (Interview: 1, 2, 3) mixed ANOVA on the number of non-redundant correct details showed no significant main effect of Condition, $F(2, 60) = 0.12$, $p = .891$, $\eta^2 = .01$, contrary to our expectation that acquainted pairs would remember more overall than unacquainted pairs (*Hypothesis 1*). There was a significant main effect of Interview, $F(1.19, 71.28) = 685.43$, $p < .001$, $\eta^2 = .92$, and a significant interaction between Condition and Interview, $F(2.38, 71.28) = 3.13$, $p = .042$, $\eta^2 = .09$.⁶

Simple effects analyses revealed no significant differences between conditions for correct information reported in the first interview, $F(2, 60) = 1.11$, $p = .337$, $\eta^2 = .04$, or the second interview, $F(2, 60) = 1.75$, $p = .182$, $\eta^2 = .06$, but a significant difference for the third interview, $F(2,$

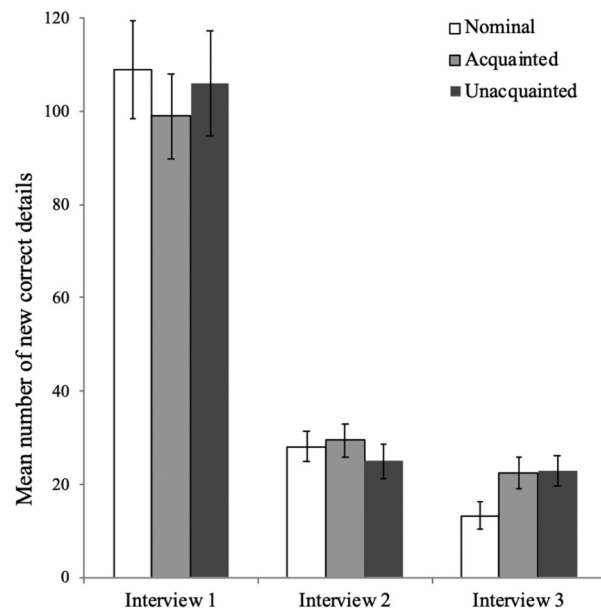


Figure 1. Mean number of non-redundant correct details reported in each interview by nominal, acquainted and unacquainted pairs. Bars for Interview 1 reflect baseline performance; bars for Interview 2 and 3 reflect the addition of new correct information not previously mentioned by either pair member in a previous interview. Error bars represent 95% confidence intervals.

60) = 12.64, $p < .001$, $\eta^2 = .30$. This difference was followed up by three Bonferroni-corrected simple ANOVAs ($\alpha = .017$). Nominal pairs differed significantly from acquainted pairs, $F(1, 41) = 17.41$, $p < .001$, $\eta^2 = .30$, as well as from unacquainted pairs, $F(1, 40) = 20.70$, $p < .001$, $\eta^2 = .34$, whereas the latter two did not differ significantly, $F(1, 39) = 0.04$, $p = .833$, $\eta^2 = .00$. Figure 1 shows that acquainted and unacquainted pairs both reported between 22 and 23 new correct details on average in the final interview – significantly more than the 13 new correct details reported on average by nominal pairs. Thus, in line with *Hypothesis 2*, we observed post-collaborative benefits in the recall of new correct information, regardless of whether witnesses collaborated with an acquainted or unacquainted partner.

Incorrect recall

Figure 2 shows the number of non-redundant incorrect details reported in each interview, again disregarding details that were repeated across interviews. A 3 (Condition: nominal, acquainted, unacquainted) \times 3 (Interview: 1, 2, 3) mixed ANOVA on the number of incorrect details showed no significant main effect of Condition, $F(2, 60) = 1.47$, $p = .238$, $\eta^2 = .05$, but a significant main effect of Interview, $F(1.57, 94.30) = 162.72$, $p < .001$, $\eta^2 = .73$, and a significant interaction between Condition and Interview, $F(3.14, 94.30) = 4.59$, $p = .004$, $\eta^2 = .13$.⁷

Simple effects analyses revealed no significant effect of Condition on the number of incorrect details reported in the first interview, $F(2, 60) = 0.32$, $p = .728$, $\eta^2 = .01$, or the third interview, $F(2, 60) = 1.45$, $p = .242$, $\eta^2 = .05$, but a

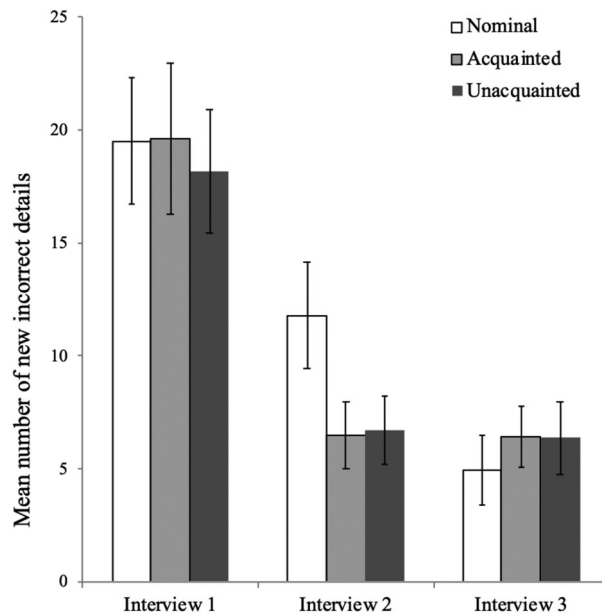


Figure 2. Mean number of non-redundant incorrect details reported in each interview by nominal, acquainted and unacquainted pairs. Bars for Interview 1 reflect baseline performance; bars for Interview 2 and 3 reflect the addition of new incorrect information not previously mentioned by either pair member in a previous interview. Error bars represent 95% confidence intervals.

significant effect for the second interview, $F(2, 60) = 11.54$, $p < .001$, $\eta^2 = .28$. That significant effect was examined further with three Bonferroni-corrected independent t -tests ($\alpha = .017$).⁸ Nominal pairs differed significantly from both acquainted pairs, $t(35.21) = 3.97$, $p < .001$, $d = -1.20$, 95% CI $[-1.84, -0.54]$, and unacquainted pairs, $t(35.39) = 3.78$, $p < .001$, $d = -1.14$, 95% CI $[-1.79, -0.48]$, with no significant difference between the latter two, $t(39) = 0.22$, $p = .827$, $d = 0.07$, 95% CI $[-0.54, 0.68]$. As shown in Figure 2, and in line with our prediction of collaborative error pruning (Hypothesis 3), nominal pairs introduced almost twice as many new errors during the second interview (about 12 on average) compared to acquainted and unacquainted pairs (between 6 and 7 on average). In contrast, our prediction that error pruning would be particularly pronounced for acquainted pairs (Hypothesis 3a) was not supported. In sum, we found evidence for error-pruning during collaborative interviews, regardless of acquaintance between witnesses.

Relationship duration and quality

For acquainted pairs, we explored the duration and quality of the relationship between witnesses. Self-reported relationship duration varied widely, from one month to over 43 years ($M = 7.96$, $SD = 11.06$). Participants provided individual ratings for ten statements about relationship quality, on a scale from 1 (totally disagree) to 7 (totally agree). Thus, the scale allowed for a total score between 10 (minimum) and 70 (maximum). The individual ratings were averaged per pair for further analysis. Overall, pairs

rated their relationship quality as high ($M = 61.71$, $SD = 6.46$), with scores ranging from 49.50 to 70.

Linear regressions were conducted to examine whether relationship duration or quality affected collaborative memory performance. The model with duration and quality as predictors did not explain a significant proportion of the variance in (a) correct recall during the collaborative interview, $R^2 = .04$, $F(2, 47) = 1.08$, $p = .349$, (b) incorrect recall during the collaborative interview, $R^2 = .04$, $F(2, 47) = 1.08$, $p = .349$, (c) correct recall after collaboration (i.e., in Interview 3), $R^2 = .04$, $F(2, 47) = 1.08$, $p = .349$, or (d) incorrect recall after collaboration, $R^2 = .04$, $F(2, 47) = 1.08$, $p = .349$.⁹ Thus, neither a longer relationship (Hypothesis 4) nor a better relationship improved collaborative recall performance.

Retrieval strategies

We also examined retrieval strategies used by pairs of witnesses during collaborative interviews, displayed in Table 1. Acquainted and unacquainted pairs did not differ significantly in the total number of strategies used, $t(39) = 0.36$, $p = .721$, $d = 0.11$, 95% CI $[-0.50, 0.72]$. To assess whether acquainted and unacquainted pairs used different types of strategies, the strategies listed in Table 1 were entered into a multivariate analysis of variance (MANOVA).¹⁰ The MANOVA revealed no significant multivariate effect, $F(11, 29) = 0.78$, $p = .661$, $\eta^2 = .23$, and none of the simple effects were significant (all $ps > .129$, all $\eta^2s < .06$). Thus, contrary to Hypothesis 5, acquainted and unacquainted pairs did not differ in the number or type of collaborative retrieval strategies used during the collaborative interview.

To examine how retrieval strategies affected the amount of information reported during the collaborative interview, we conducted a linear regression. We first entered content-focused strategies (acknowledgements, repetitions, reformulations and elaborations; $\alpha = .82$), which were expected to positively predict the amount recalled. Next, we entered process-focused strategies (successful cues, failed cues, corrections, explanations, expressions of renewed remembering, role division and checking accuracy; $\alpha = .59$), which were expected to have no effect on the amount recalled. The model with content-focused strategies explained a significant portion of the variance in the amount of information reported in the collaborative interview, $R^2 = .33$, $F(4, 36) = 4.52$, $p = .005$. The number of elaborations during the collaborative interview was a significant positive predictor, $\beta = .49$, $t(40) = 2.13$, $p = .040$, whereas the other three strategies were not (all $ps > .307$). The addition of process-focused strategies to the model did not significantly increase the portion of variance explained, $R^2 = .16$, $F(7, 29) = 1.33$, $p = .273$. None of those strategies significantly predicted the amount reported (all $ps > .126$).

We conducted another linear regression on the accuracy of information reported during the collaborative interview,

again entering content-focused strategies first and process-focused strategies second. Neither the model with content-focused strategies, $R^2 = .10$, $F(4, 36) = 0.96$, $p = .441$, nor the addition of process-focused strategies, $R^2 = .06$, $F(7, 29) = 0.32$, $p = .941$, explained a significant portion of the variance in accuracy. None of the strategies were significant predictors (all $ps > .108$). In sum, we replicated previous findings showing that pairs who use content-focused strategies report more information during the collaborative interview (*Hypothesis 6*), whereas the use of process-focused strategies does not affect the amount reported. As in previous research, neither type of strategies was associated with the accuracy of collaborative recall.

Discussion

We investigated collaborative eyewitness interviews with acquainted, unacquainted and nominal pairs. Our hypothesis that acquainted pairs would remember more overall than unacquainted pairs was not supported (*Hypothesis 1*). In line with our predictions, however, the analysis revealed two benefits of collaboration. First, both acquainted and unacquainted pairs remembered more new correct details in the final interview than nominal pairs (i.e., delayed cross-cuing; *Hypothesis 2*). Second, collaborative pairs reported significantly fewer new incorrect details during the second interview than nominal pairs (i.e., error pruning during collaboration; *Hypothesis 3*), though we did not find support for our prediction that error-pruning benefits would be particularly pronounced for acquainted pairs (*Hypothesis 3a*). Neither the duration of the relationship between acquainted partners (*Hypothesis 4*) nor its self-rated quality affected recall performance during or after collaboration. Surprisingly, acquainted and unacquainted pairs did not differ in the number or type of retrieval strategies used during the collaborative interview (*Hypothesis 5*). Finally, pairs who acknowledged, repeated, rephrased and elaborated upon each other's contributions during the collaborative interview remembered more together (*Hypothesis 6*).

Correct recall

Our results revealed no significant differences between conditions in correct recall in the second interview, meaning that collaboration (with an acquainted or unacquainted partner) did not facilitate or inhibit the report of new correct information *during* collaboration. We did observe significant collaborative benefits *after* collaboration, however: pairs that had previously taken part in a collaborative interview (with an acquainted or unacquainted partner) reported approximately 70% more new correct information in the final interview than pairs that never collaborated. This finding is in line with a delayed cross-cuing effect, which has also been observed in previous research (e.g., Congleton & Rajaram, 2011; Takahashi

& Saito, 2004; Vredeveldt et al., 2017). It seems that the discussion during the second interview helped participants to remember new information, but they did not have the opportunity to provide that information during the discussion (e.g., due to retrieval disruption, cf. Barber, Harris, & Rajaram, 2015; Basden et al., 1997), so they reported the new memories only after collaboration.

Alternatively, the finding that collaborative pairs recalled more new correct information during the third interview could be related to motivation. Because participants were asked repeatedly to report what happened in the movie scene, by the third interview their motivation may have dwindled. This drop in motivation may have been particularly pronounced for participants in the nominal condition, who had not had the opportunity to recall with a partner during the second interview but instead were asked to report about the event individually three times in a row. We asked participants to tell their story to a different interviewer each time to mitigate this problem, but future research should assess participants' motivation levels to examine whether participants were still motivated by the third interview. If participants in the nominal condition were less motivated by the third interview than participants in the collaborative conditions, this could be an alternative explanation for the finding that nominal pairs reported less new information in that interview.

Incorrect recall

During the second interview, pair members who were interviewed separately introduced almost twice as many new errors as pair members who were interviewed together (regardless of acquaintance). That points to collaborative error pruning, which has consistently been observed for recall of simple stimuli such as word lists and stories (for an overview, see Rajaram & Pereira-Pasarin, 2010) as well as witnessed events (e.g., Barthel, Wessel, Huntjens, & Verwoerd, 2017; Vredeveldt et al., 2017; Wessel et al., 2015). Thus, when witnesses work together to remember, they produce more accurate testimony. The present findings extend previous research by showing that error pruning does not just occur for the total number of incorrect details reported during collaboration (i.e., including repeated details), but also for the number of *new* incorrect details, that is, details introduced for the first time during collaboration.

Retrieval strategies

The types of strategies that proved helpful in facilitating remembering during the collaborative interview were similar to those reported in previous studies: acknowledge, repeat, rephrase and elaborate (Vredeveldt et al., 2016). Partners who focused on the content of each other's remarks and built upon each other's memories by elaborating on what the other said, remembered significantly more

together. Other types of strategies that focused more on the process of remembering together, such as discussing how roles should be divided, explaining the reasoning behind one's own statement and questioning one's own and each other's contributions, were not significantly associated with the amount of information remembered. Neither content-focused nor process-focused strategies predicted the accuracy of the information reported in the collaborative interview. This pattern is largely consistent with previous results on the effectiveness of collaborative retrieval strategies in a wide range of settings, such as students' oral recall of a videotaped event (Vredeveldt et al., 2017; Vredeveldt & Van Koppen, 2018), married couples' oral recall of autobiographical information and a theatre play (Harris et al., 2011, 2018; Vredeveldt et al., 2016), pilots' written recall of flight scenarios (Meade et al., 2009) and police officers' written recall of an arrest (Vredeveldt et al., 2018).

Even though partners elaborated upon each other's contributions frequently during collaborative interviews (56 times on average), pairs in the collaborative conditions did not report significantly more non-redundant correct details during the second interview than pairs in the nominal condition. In part, this apparent contradiction can be explained by the fact that elaborations comprised countable details (e.g., "he had brown hair") but also non-countable details (e.g., "he looked suspicious"). Thus, not all elaborations counted towards the number of correct details. Further, although an elaboration consisted of information that was new in the context of that interview, it did not necessarily constitute information that had never been mentioned before – in fact, witnesses frequently elaborated upon each other's contributions with information that they had already mentioned in their first interview. Because repeated details were counted only the first time they were mentioned, such elaborations did not count towards the number of correct details reported in the second interview.

Acquainted versus unacquainted pairs

This study was one of the first to compare the strategies used by acquainted and unacquainted pairs, respectively (but see Gould et al., 1994). Based on transactive memory theory (Wegner, 1987), we expected that acquainted pairs would use different types of retrieval strategies, and would show better collaborative recall performance, than unacquainted pairs. Yet, we found no significant differences between acquainted and unacquainted pairs; not in retrieval strategies and not in correct or incorrect recall. Some previous studies showed differences between acquainted and unacquainted pairs in communicative strategies (Gould et al., 1994), collaborative recall performance (Andersson & Rönnerberg, 1995, 1996; Hollingshead, 1998a, 1998b; Wegner et al., 1991) and memory conformity (French et al., 2008; Hope et al., 2008), but we are not the first to report null findings in this regard (Gould et al., 2002;

Johansson et al., 2000). Below, we propose two possible explanations for the lack of differences between acquainted and unacquainted pairs in the present study.

Some of the significant differences between acquainted and unacquainted pairs observed in previous research may be explained by methodological features of those studies. Specifically, in some previous studies participants were not assigned randomly to conditions. Rather, acquainted pairs were recruited for the acquainted condition and individuals were recruited for the unacquainted condition (Andersson & Rönnerberg, 1995, 1996; French et al., 2008; Hope et al., 2008). Therefore, an alternative explanation for the superior performance of acquainted pairs could be that participants in the acquainted condition had superior memory abilities to begin with, compared to participants in the individual condition. After all, individuals who sign up for research with a friend or romantic partner may be more likely to have good social relationships than individuals who sign up alone, and there is a clear bidirectional relationship between social relationships and cognitive abilities such as memory (see Wascher, Kulahci, Langley, & Shaw, 2018, for an overview). This potential explanation is also consistent with evidence that couples with a more intimate relationship perform better on recall tasks *regardless* of whether they collaborate or not (Barnier et al., 2014). In the present study, we ruled out pre-existing differences between conditions by recruiting all participants in pairs, who were then randomly assigned to work either with an acquainted partner or with an unacquainted partner (or alone). It should be noted, however, that transactive memory studies (Hollingshead, 1998a, 1998b; Wegner et al., 1991) similarly involved random assignment and nonetheless found differences between acquainted and unacquainted pairs, so this explanation cannot fully account for the discrepancy between the current and previous findings.

Another potential explanation for our null findings could be related to our diverse participant group. Where previous studies that involved random assignment included only college students in their early twenties who had been dating for about two years (Hollingshead, 1998a, 1998b; Wegner et al., 1991), our sample consisted of a diverse group of individuals in varying relationships (friends, romantic partners, family members) who had known each other for between one month and 43 years. Previous research has revealed a great variability in collaborative retrieval strategies used by couples that have been married for decades (Harris et al., 2011, 2018; Vredeveldt et al., 2016) and our sample was even more diverse. Therefore, any between-group differences in our study may have been masked by a large within-group variability in both collaborative conditions (see Barnier, Klein, & Harris, 2018, for a more elaborate discussion of this issue). This potential explanation is supported by an inspection of our descriptive data, which show a large range in the frequency for each of the retrieval strategies in both acquainted and unacquainted pairs.

Features of the relationship

For acquainted partners, we found no association between the duration or quality of their relationship and collaborative or post-collaborative recall performance. The absence of significant associations between relationship quality and recall performance may have been due to a ceiling effect, since all pairs rated their relationship quality as high, with a minimum score of 50 and an average of 62 out of 70 (see also Browning et al., 2018, who had the same problem). In contrast, relationship duration varied widely, so this null finding cannot be attributed to restricted variability or floor/ceiling effects. Instead, it is in line with previous results showing no association between relationship duration and recall performance (Vredeveltdt et al., 2016, 2018; Wegner et al., 1991). Vredeveltdt et al. (2016) speculated that there may be a minimum relationship duration for the development of an effective transactive memory system, after which additional time does not improve the system any further. In other words, they suggested that an association in their study would have been found if only the sample had included more pairs with shorter relationships. The present findings are at odds with that suggestion, however, since even partners who had never met each other used similar retrieval strategies and achieved equivalent recall performance as partners who had known each other for a long time. Thus, evidence is accumulating that the way people remember together, and the likelihood of collaborative recall success, is not determined by how long partners have known each other (cf. Harris et al., 2018).

Directions for future research

To provide more insight into the theoretical underpinnings of shared memory systems, it would be informative to explore how collaborative memory works for different types of to-be-remembered information. According to transactive memory theory, acquainted pairs are expected to outperform unacquainted pairs only if they can make use of an implicit shared system for remembering information (e.g., Hollingshead, 1998a). It is reasonable to assume that such a shared system is more readily applied to an event of personal significance (cf. Harris et al., 2011) or to an intentional learning task (cf. Wegner et al., 1991), than to an incidental learning task like the one used in the present study. For example, when a couple meets their new neighbours, the wife might make an effort to remember their names because she knows that her husband is not going to remember. In contrast, the wife is unlikely to make the same effort for the names of characters seen in a movie, since that information is not personally meaningful and she does not expect to be asked about it later. Thus, the incidental learning task in the current study may not have provided sufficient opportunity for pairs to take advantage of their shared memory systems. Future studies could systematically compare collaborative recall of different types of to-be-remembered materials.

Another interesting area for future research is the role of retrieval strategies in collaborative recall. First, it is unclear to what extent retrieval strategies affect recall performance, as opposed to recall performance affecting strategies. For example, if one witness makes many errors, the other might be more likely to correct rather than acknowledge their contributions. Similarly, if one witness has a lot to say about the event, the other has more opportunity to elaborate on their contributions. To further investigate the reciprocal relationship between retrieval strategies and recall performance, future studies could employ proximity coefficient analysis (Taylor, 2006). Second, researchers should continue to explore procedures designed to encourage effective collaborative retrieval strategies with the aim to optimise the productivity of the collaborative interview (see also Vredeveltdt & Van Koppen, 2018).

Practical implications

The practical implications of the current findings are straightforward: there is no reason to restrict the use of collaborative eyewitness interviews to either acquainted or unacquainted pairs, since it seems to be equally effective for both. Nonetheless, police officers should implement a number of safeguards before introducing the collaborative interview in practice. First, they should always interview witnesses individually before collaboration, to establish what each of them knows independently and to avoid witnesses influencing each other's initial memory reports. Of course, avoiding all co-witness influence is usually not possible because the majority of witnesses have talked to each other before talking to the police (Paterson & Kemp, 2006; Skagerberg & Wright, 2008), but police officers should at least try to obtain an initial report that is as independent as possible. Second, police officers should ensure that all interviews, both individual and collaborative, are audio- and/or video-recorded to allow for an inspection of how witness reports develop from the first to the final interview. Because conducting and analysing multiple interviews with the same witness is rather time-consuming, we would expect the police to use the investigative tool of collaborative interviewing only in serious cases in which little other evidence is available.

If the above-mentioned safeguards are implemented, judges will be able to assess to what extent the testimony was influenced by another witness. Of course, it remains possible that witnesses contaminate each other's memory, but the accumulated body of evidence to date shows that people make fewer errors when they collaborate during recall. Thus, when witnesses work together to remember, the new information they provide contains fewer errors that could potentially send police investigations in the wrong direction. Moreover, through a process of (delayed) cross-cuing, witnesses can help each other remember new information that could provide new leads for the investigation, which may in turn lead to the discovery of new evidence. The present findings show

that it does not matter whether you interview acquainted or unacquainted witnesses together. Pairs of strangers prune each other's errors and inspire subsequent remembering just as much as pairs of friends, lovers or family members do.

Notes

1. There was no significant difference in gender composition between conditions; $\chi^2(4) = 5.72$, $p = .231$, Cramer's $V = .21$.
2. There was no significant difference between experimental conditions in the delay between watching the movie and participating in the interview, $F(2, 60) = 0.65$, $p = .524$, $\eta^2 = .02$.
3. Preliminary analyses revealed no significant differences between the four interviewers on any of the dependent variables of interest.
4. Most participants did not require any hints ($N = 83$), but some required one hint ($N = 23$), two hints ($N = 6$), three hints ($N = 6$), four hints ($N = 7$), or five hints ($N = 1$).
5. At the start of the third interview, participants completed lineup identification tests for the car and the driver, which are not analysed here but were included as part of a student thesis.
6. Because Mauchly's test indicated that the assumption of sphericity was violated, $\chi^2(2) = 67.90$, $p < .001$, $\hat{\epsilon} = .59$, Greenhouse-Geisser-corrected values are reported for the repeated-measures effects.
7. Greenhouse-Geisser-corrected values are reported for the repeated-measures effects due to a violation of the assumption of sphericity, $\chi^2(2) = 18.78$, $p < .001$, $\hat{\epsilon} = .79$. Further, because incorrect recall in Interview 2 had a positively skewed distribution, we checked the outcomes of the analyses with square-root transformed variables (which were normally distributed). This confirmed all reported findings.
8. Because the assumption of heterogeneity was violated, we used t -tests and adjusted the degrees of freedom.
9. Because relationship duration had a positively skewed distribution, we checked the outcomes of all analyses with the log-transformed variable (which was normally distributed). This confirmed all reported findings.
10. Prior to the analysis, we removed strategies that occurred less than once per collaborative interview on average, namely, positive and negative references to the relationship (see Table 1), which could not be transformed into normal distributions. Some of the remaining variables were positively skewed and leptokurtic, which was corrected through square-root transformation. The outcome of the analysis with the square-root transformed variables confirmed the outcome of the analysis with the original variables reported in the text.

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