The effects of perceived memory ability on memory conformity for an event

Lauren A. Monds^a , Mark Howard^b, Helen M. Paterson^c and Richard I. Kemp^d

^a*Faculty of Medicine and Health, University of Sydney, Australia;* ^b*Corrective Services New South Wales, Sydney, NSW, Australia;* ^c*School of Psychology, University of Sydney, Sydney, NSW, Australia;* ^d*Psychology, University of New South Wales, Sydney, NSW, Australia*

The present study investigated the impact of false feedback about individual memory performance relative to a co-witness on susceptibility to misinformation. Pairs of participants ($n = 130$; 65 pairs) completed a visual memory test and received false feedback on their performance indicating that the memory ability of one participant in the pair was stronger relative to the other participant. The participants then viewed a crime video (either the same video or one slightly different to their partner) and discussed their memories for this video with their co-witness. Participants completed a semi-cued recall task and a recognition test about the video. False memory feedback indicating lower relative performance was associated with significant increases in sensitivity to misinformation. The results are discussed in reference to the potential contributions that co-witnesses' perceptions of both their partner's reliability and their own reliability have on event memory.

Key words: co-witness discussion; memory; memory conformity; misinformation effect; social contagion of memory.

After an event such as crime has occurred, witnesses often discuss their experience with a co-witness (Paterson & Kemp, 2006a). This discussion may lead to people incorporating this external information into their own report of the event, which is problematic if the information they are exposed to is incorrect (the misinformation effect; see Loftus, 2005, for a review). The potential for co-witness discussion to generate misinformation effects has become known as 'memory conformity' (Wright, Self, & Justice, 2000) and 'social contagion of memory' (Meade & Roediger, 2002; Roediger, Meade, & Bergman, 2001). According to some research findings, co-witness discussion appears

to be one of the most influential methods for producing this effect (compared to other forms of misinformation exposure, e.g. media reports, narratives; Gabbert, Memon, Allan, & Wright, 2004; Paterson & Kemp, 2006b); however, it should be noted that this is not a universal finding (e.g. see Blank et al., 2013).

While a number of studies have examined effects of co-witness discussion on memory, relatively little research has been conducted to investigate how individual differences influence susceptibility to memory conformity. One important area worth exploring is that of individual perceptions and confidence in memory ability. If an individual believes they have

Correspondence: Lauren A. Monds, Sydney Medical School, University of Sydney, Camperdown, Sydney, NSW, Australia, 2006. Email: Lauren.Monds@sydney.edu.au
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inferior memory ability to others, this may impact whether they accept another witness's responses as correct over their own (Allan, Midjord, Martin, & Gabbert, 2012; Horry, Palmer, Sexton, & Brewer, 2012; Leippe, Eisenstadt, Rauch, & Stambush, 2006).

One method to explore the influence of subjective perceptions of memory ability has focused on manipulating the credibility of the co-witness. For example, in Allan et al. (2012), participants viewed a scene for 30, 60 or 120 s and were told their (virtual) partner would view the scene for either half or twice as long as them. Participants were then asked to respond to forced-choice memory questions after they saw their partner's responses: one third of which were accurate, one third were inaccurate and for one third no response was given. It was found that conformity was especially prevalent in the condition where participants only had 30 s to encode the stimuli, and particularly for those participants who believed they saw the scenes for half the time their partner did. These results suggest that people adjusted their responses based on their perceptions of the likely quality of their partner's memory (see also Gabbert, Memon, & Wright, 2007).

In another study, Wright and Villalba (2012) had participants memorise a series of pictures before completing a recognition task where they were asked to rate their confidence that images had been shown previously. Participants were then presented with the answers of a 'previous participant' (a virtual partner) and were given the option to change their own answer in light of this information. It was found that participants with initial inaccurate memories were more likely to be influenced by their partner's answers than those with correct answers, even if they originally had a high level of confidence in incorrect responses. The implication of this result is that initial incorrect memories about an event can be changed; this is useful if the external memory is correct, but problematic if the new information is also incorrect.

Importantly, as the memory collaboration in the abovementioned studies did not occur face to face, it is important to consider how perceived memory ability influences conformity in the context of direct interactions with co-witnesses. In a study by Thorley (2013), participants studied words and were asked to collaborate with a confederate in completing a recognition test. When responding first, the confederate made an incorrect response half the time. Results indicated that when participants heard the confederate's answers before they gave their own, they tended to conform regardless of whether those responses were correct or not. As actual recall ability was not found to be significantly related to memory conformity, this result may be attributable to social conformity effects rather than memory effects.

In another study (Numbers, Meade, & Perga, 2014), participants viewed a series of pictures and later took turns recalling the pictures with a co-witness, who was a confederate who interjected incorrect answers between 0% and 100% of the time. During individual recall after the discussion, it was found that participants incorporated misleading suggestions equally from a partner who was mostly accurate (33% incorrect) as from a partner who was not at all accurate (100% incorrect). This finding suggests that even when a co-witness has demonstrably poor memory, it may not be taken into consideration during a collaborative memory task. Although both of these studies did involve face-to-face interaction between co-witnesses, it is important to consider whether these effects remain in the face of arguably more ecologically valid procedures such as an open discussion of witnessed stimuli.

While previous research has manipulated influences of credibility in co-witness discussion by having a confederate provide incorrect responses, these studies require the participant to decide whether this means their conversation partner is a reliable co-witness or not. There is the potential that decisions about co-witness reliability and acceptance of information may

be influenced by participants' perceptions of their own relative reliability. For example, in comparison to a participant's beliefs about their own memory, even an incorrect partner may be considered more reliable. In addition, much of the previous research has involved 'turn taking' to provide answers, which is problematic in that in a real-world situation co-witness discussions are unlikely to progress in such a manner. One way to address this limitation is by using a procedure such as that employed by Gabbert, Memon, and Allan (2003), where a pair of co-witnesses view slightly different versions of a video before discussing their memory of the event. These limitations were explored in French, Garry, and Mori (2011), where participants were led to believe that they had the same, better or worse vision than their co-witness when viewing different versions of a movie. It was found that participants took into account their own credibility as well as their partner's credibility in relation to one another, and this in turn influenced susceptibility to misinformation during the discussion.

Our current study builds on the findings of French et al. (2011) by using a broader cue to credibility – specifically, by manipulating the participant's own beliefs about their memory in the form of false feedback.

The aim of the current study was to examine whether susceptibility to memory conformity effects is related to an individual's perceptions of their memory ability in comparison to that of their co-witness. Specifically, pairs of participants viewed a crime video and discussed their memories for this video with a co-witness who had been shown either the same version of the video or a slightly different version. Discussions occurred in the context of false feedback provided to pairs regarding their individual performance in a visual memory task completed earlier. It was expected that when the feedback suggested the participants' memory was poor in comparison to their partner, they would be more likely to conform to their partner's

memories for the video, and when told that their memory was better than that of their co-witness, that they would be less likely to conform.

Method

Participants and design

Participants were 159 undergraduate psychology students (107 female; 52 male) who completed the study in exchange for course credit. The mean age of participants was 19.7 years ($SD = 5.2$). For the purposes of this study, all participants were required to complete one of the experimental sessions in pairs and were allocated to a partner on a quasi-random basis according to the timeslot in which they were recruited. As a result of difficulties aligning session times, 29 participants could not be paired and were excluded from primary analyses, leaving 130 participants or 65 pairs.

Each pair of participants was randomly assigned to watch either the same video of a simulated theft or slightly different versions of the theft. Within each pair, one participant was assigned to receive false feedback indicating poor memory performance, and the other was assigned to receive false feedback indicating good memory performance, relative to that of the other member of the pair. As such this study employed a 2 (false feedback: relative high; relative low) $\times$ 2 (video type: same; different) between-subjects design.

Materials

Visual memory task

The Wechsler Memory Scale–III (WMS–III; Psychological Corporation, 1997) visual memory tasks (Family Pictures I and II) were administered to participants as a means of providing subsequent false feedback about their memory performance. The Family Pictures subtests of the WMS–III were selected as a viable basis for false feedback because they assess immediate and delayed visual event memory, which was deemed to have face

validity as being relevant to memory performance when discussing the experimental video stimulus. Participants were shown four images, each showing four people involved in a variety of activities. Immediately after viewing the images, participants were asked to recall details of the scenes such as who was present, what they were doing and where they were positioned (Family Pictures I). Recall for the scenes was retested after the participants had seen the crime video (Family Pictures II). Administration and scoring of the Family Pictures subtests followed standard procedures as detailed in the WMS–III Administration and Scoring Manual (Wechsler, 1997).

Eyewitness stimulus

The eyewitness stimulus was a short video depicting a simulated theft. The video showed a woman entering an unlocked apartment and stealing several items. For the purposes of this study two similar versions of the video were produced, which differed on a number of

visual and auditory details. For example, in Video A the apartment resident was named Claire, and a phone was stolen, whereas in Video B the resident was named Kate, and jewellery was stolen. Each version of the simulated theft was approximately three minutes long. See Table 1 for a summary of the differences between the two videos.

Measures of event memory

Open-ended recall. Participants' memory for the video stimulus was assessed by using a series of open-ended questions with a semi-cued recall format. Participants recorded written responses to questions that asked them to describe in detail the sequence of events presented in the video, the setting, the appearance of the actors, what was said by the actors, what was stolen, and any other details of events in the video they could remember.

Participants' open-ended recall for the video stimulus was scored by an independent judge who was blind to the experimental

Table 1. Summary of differences between Video A and Video B.

	Video A	Video B
<i>Conflicting information between videos</i>	<p>The woman in the flat is making tea</p> <p>Flatmate is named Claire</p> <p>Thief has brown hair</p> <p>Thief's hair is tied back</p> <p>Thief steals DVDs</p> <p>Television is off</p> <p>Thief places stolen money in a bag</p>	<p>The woman in the flat is making hot chocolate</p> <p>Flatmate is named Kate</p> <p>Thief has blonde hair</p> <p>Thief's hair is loose</p> <p>Thief steals CDs</p> <p>Television is on</p> <p>Thief places stolen money in a wallet</p>
<i>Items in Video A only</i>	<p>Thief is wearing a cardigan</p> <p>Clock by television</p> <p>Thief steals a phone</p> <p>It is raining heavily</p>	<p>Thief is not wearing a cardigan</p> <p>No clock</p> <p>Thief does not steal a phone</p> <p>It is not raining outside</p>
<i>Items in Video B only</i>	<p>Do not see apartment number</p> <p>No magazine on the bed</p> <p>No Christmas decorations</p> <p>Thief not wearing a necklace</p> <p>Thief does not steal jewellery</p>	<p>Apartment number 23</p> <p>'Cosmopolitan' magazine on bed</p> <p>Christmas decorations</p> <p>Thief wearing a long necklace</p> <p>Thief steals jewellery</p>

conditions. Each participant's response was scored for (a) total number of accurate propositions; (b) total number of fabrications (spontaneous errors, or confabulations, involving recall of features that were not present in either version of the video); and (c) total number of misled propositions (recall of features that were unique to the non-witnessed video). For the purposes of analysis the total number of accurate propositions, total number of fabrications and total number of misled propositions were converted into percentage of maximum possible (POMP) scores, by expressing the number of each category of proposition as a proportion of total scored responses given during the recall phase.

Recognition. Participants also completed a recognition questionnaire consisting of 30 items. For each item, participants were asked to record whether or not a statement about the content of the video was accurate to their recollection. Of the 30 items, six were true, and seven were false for both versions of the video. An additional nine statements were only true for Video Version A while being false for Video Version B, and eight statements were only true for Video Version B while being false for Video Version A. These latter items were used to test for acceptance of misleading propositions. For example, the statement, 'the woman's flatmate was called Claire' was true for Video Version A but false for Video Version B; therefore recognition of this statement as true by a participant who viewed Video Version B was indicative of acceptance of information presented only in Video Version A.

Given the forced-choice format of recognition items, it is important to account for each participant's tendency towards recognition inaccuracy in general when assessing their acceptance of discussion-induced misinformation in particular. To achieve this we calculated the signal detection measure d' (e.g. Stanislaw & Todorov, 1999). The d' measure was calculated by subtracting the standardised (z -transformed) proportion of hits from the

standardised proportion of false alarms. In keeping with the aims of this study, we defined the signal of interest to be acceptance of misinformation. Hits comprised positive recognition responses for misleading statements that were only true for the other version of the video, and false alarms comprised positive recognition responses for statements that were true for the version of the video they witnessed. More positive d' scores therefore indicated greater sensitivity, and more negative scores indicated lower sensitivity to acceptance of misleading propositions, adjusted for the extent of acceptance of non-misleading propositions.

Experimental manipulation checks. Participants were asked several questions designed to assess the success of the experimental manipulations and their awareness of the manipulations. The perceived quality and outcomes of co-witness discussion between pairs of participants during the study were assessed by asking participants to indicate whether the discussion with their partner involved a free and open exchange of information, and whether the discussion helped them remember events or provided new information regarding the video, on a series of Likert-type 6-point scales (1 = 'Yes, very much'; 6 = 'No, not at all'). In addition, the false feedback manipulation was assessed by asking participants to rate how good they believed their memory to be in comparison to that of their partner, on a 5-point scale (1 = 'Much worse'; 5 = 'Much better').

Procedure

The experiment took place over two sessions. All participants attended the first session individually before being allocated to pairs for Session 2. Participants were informed that the primary purpose of the study was about memory for crime events; once started they were also asked to complete the memory test as an additional component of the experiment. In the first session participants completed the immediate recall section of the WMS-III visual

memory task (Family Pictures I). They were then randomly assigned to view Crime Video A or B before completing the delayed recall section of the WMS-III visual memory task (Family Pictures II). After completion of this phase, a second meeting was scheduled with participants, and they were allocated to pairs on the basis of availability and their assignment to video type conditions (same video vs. different video).

After a delay of approximately one week, participants returned to the laboratory in pairs for the second session. At the start of the second session, participants were given written information indicating that average performance on the Family Pictures II subtest of the WMS-III ranged from 26.3 to 38.2. Participants were then unexpectedly provided with false feedback about their test performance in the presence of the partner in their pair. Within each pair one participant was told they had achieved a score of 41 whereas the other was told that they had achieved a score of 29. The selection of these scores in conjunction with provision of normative data was intended to encourage participants to infer that they had achieved a relatively high (above average) score and a relatively low (low average) score, respectively. Participants were not informed to expect feedback on the test. The allocation of participants to the feedback conditions was random and independent of their real memory test score. Participants were given a few minutes to compare these scores to the normative data provided on the information sheet.

Participants were then asked to discuss the video they had watched the previous week. It was implied that they had both seen the same video, and no mention was made of the two different versions of the video. They were told their discussion should cover the sequence of events, the location, the appearance of individuals shown in the video, the dialogue, and what was stolen. Participants were given 10 min to discuss the video before being separated. They were then given as much time as they needed to individually complete the open-

ended recall questions and recognition test (see Figure 1 for a flow diagram of the procedure).

Results

Manipulation checks

A series of nonparametric Wilcoxon rank-sum tests were conducted for each of the three questions relating to participants' perceptions of the post-event discussion with their partner in each pair. On average, participants felt they had an open and free exchange of ideas during the discussion (median = 2.0), and there was no significant difference on this rating between participants in pairs who had seen the same version of the video and those who saw different versions of the video, Mann-Whitney $U = 1662.5$, $z = -0.97$, $p = .33$, $r = -.08$. However, participants from pairs who saw different videos were significantly more likely to report that they had learned new information from the discussion than were same-video pairs, $U = 1315.0$, $z = -2.73$, $p = .006$, $r = -.24$. Similarly, participants from different-video pairs were significantly more likely to agree with the proposition that the discussion helped them remember information they may otherwise have forgotten than participants from same-video pairs, $U = 1430.0$, $z = -2.14$, $p = .03$, $r = -.18$.

Participants' responses about their memory ability relative to their partner indicated that our false feedback manipulation was successful on average. Participants in the relative low feedback condition described their memory ability as significantly worse than that of their partner on average, compared to participants in the relative high feedback condition, $U = 820.5$, $z = -5.64$, $p < .0005$, $r = -.49$. In contrast, participants in the relative high and relative low false feedback conditions were not observed to differ significantly on average in their immediate recall, $U = 2014.0$, $z = -0.16$, $p = .87$, $r = .01$, or delayed recall,

Figure 1. Flow diagram of the experimental procedure. The shaded area indicates the aspects of the study where participants are in pairs. WMS–III = Wechsler Memory Scale–Third Edition.

$U = 2025.0$, $z = -0.11$, $p = .91$, $r = .009$, performance as assessed by the Family Pictures I and II tasks, respectively.

Memory conformity

Open-ended recall

Average POMP scores for recall of accurate propositions, fabrications and misled propositions for the total sample and participants in each of the experimental conditions are given in Table 2. The average incidence of non-misled fabrications and variance across participants was low ($M = .05$, $SD = .05$), which limited the validity of inferential analyses on this category of proposition. As a result the following analyses of recall responses examine effects of experimental manipulations on recall for accurate propositions and misled propositions only.

A 2 (video type: different, same) $\times$ 2 (false feedback: relative high, relative low) between-subjects analysis of variance (ANOVA) on accurate propositions showed a significant full

model effect, $F(3, 118) = 6.23$, $p = .001$, $\eta_p^2 = .14$, indicating that the experimental conditions were associated with significant differences in accurate recall across cells. There was a significant main effect for video type, $F(1, 118) = 14.81$, $p < .0005$, $\eta_p^2 = .11$. This indicated that participants from pairs who were shown different videos had lower accurate POMP scores than participants from pairs shown the same video. There was a marginal main effect of false feedback, $F(1, 118) = 3.58$, $p = .06$, $\eta_p^2 = .03$, with a trend towards lower accurate POMP scores for participants in the relative low feedback condition than for those in the relative high feedback condition. The interaction term in this model was not significant, $F(1, 118) = 0.11$, $p = .75$, $\eta_p^2 = .001$.

The full model for misled propositions was also significant, $F(3, 118) = 16.13$, $p < .0005$, $\eta_p^2 = .29$. Again, there was a main effect for video type condition, $F(1, 118) = 43.38$, $p < .0005$, $\eta_p^2 = .27$. This main effect indicated that manipulations to generate

Table 2. Recall and recognition results by condition and for the total sample.

	Video type condition				Total M (SD)
	Same video		Different video		
	Positive M (SD)	Negative M (SD)	Positive M (SD)	Negative M (SD)	
False feedback condition					
<i>Recall task</i>					
Accurate proposi- tions (POMP)	.95 (.05)	.93 (.06)	.91 (.07)	.88 (.09)	.92 (.07)
Fabrications (POMP)	.04 (.05)	.05 (.05)	.05 (.04)	.05 (.07)	.05 (.05)
Misled proposi- tions (POMP)	.004 (.01)	.01 (.01)	.04 (.05)	.06 (.04)	.03 (.05)
<i>Recognition task</i>					
True statements (%)	88.6 (8.9)	86.9 (10.2)	88.5 (10.3)	81.9 (11.4)	86.2 (10.0)
Misled statements (%)	27.8 (10.6)	29.2 (10.1)	33.2 (11.8)	38.2 (12.2)	32.7 (12.1)

Note. POMP = percentage of maximum possible score.

discussion-induced misinformation were successful, so that pairs of participants who saw different videos returned higher POMP scores for misled propositions than pairs of participants who saw the same video. Both the main effect of false feedback condition, $F(1, 118) = 2.74, p = .10, \eta_p^2 = .02$, and the Video Type $\times$ False Feedback interaction, $F(1, 118) = 1.70, p = .20, \eta_p^2 = .01$, were not significant.

Event recognition

Proportions of accurate recognition for statements that were true for the participant's video and misled recognition for statements that were only true for the alternative version of the video are given in Table 2. To assess sensitivity to acceptance of discussion-induced misinformation, we repeated the 2×2 ANOVA model with the recognition d' score entered as the dependent variable. The full model was found to be significant, $F(3, 126) = 6.86, p < .0005, \eta_p^2 = .14$. There was a significant main effect of video version, $F(1, 126) = 9.87, p = .002, \eta_p^2 = .07$, which indicated that participants in different-video pairs showed the expected increased sensitivity to recognition of misleading statements compared to participants in same-video pairs. There was also a

significant main effect of false feedback condition, $F(1, 126) = 6.81, p = .01, \eta_p^2 = .05$. This result showed that after controlling for video type, participants who received false feedback indicating poor visual memory performance relative to the partner in their pair showed significantly greater sensitivity to misleading statements than participants who received false feedback indicating above-average memory (see Figure 2). While the pattern of data suggested that effects of false feedback were more pronounced for participants in the different-video condition than for those in the same-video condition, the interaction term for this model did not reach significance, $F(1, 126) = 2.28, p = .13, \eta_p^2 = .02$.

Discussion

The aim of the current study was to investigate how belief in memory ability relative to that of another co-witness may impact susceptibility to memory conformity. Specifically, it was expected that participants who received false feedback indicating poorer visual memory performance relative to that of their partner would be more likely to conform to their partner's account than those who received positive false feedback.

Notes. Error bars represent ± 1 standard error.

Figure 2. Misled recognition d' scores by false feedback and video type conditions. Error bars represent ± 1 standard error. To view this figure in colour, please visit the online version of this Journal.

Firstly, the results of this study indicated that the memory conformity manipulation was successful. Pairs of participants who unknowingly discussed their memories for slightly different versions of the crime video reported misinformation transmitted from their conversation partner. This is a replication of the findings of numerous other studies (e.g. Gabbert et al., 2003; Paterson, Kemp, & Ng, 2011) and highlights the importance of judicial processes that consider the effects of, and where possible act to moderate, the extent of interaction and discussion between co-witnesses after critical events such as offences. The results indicate that where it is not possible to prevent co-witness discussion, two apparently similar accounts of an event could be an artefact of memory conformity between witnesses as opposed to evidence for the veracity of each independent witness.

The results also indicated that false feedback about visual memory performance influenced memory for the event stimulus. A significant main effect showed that participants who received negative false feedback had greater sensitivity to misled propositions in the recognition task than participants who received positive false feedback. Critically, however, the interaction between false feedback and video type conditions was not significant. An interpretation of this pattern of results is that the effects of false feedback may not be specific to misleading information (that is, information that was not present in the participant's video but was present in the partner's video), but could have had broader effects on recognition accuracy or acceptance of inaccurate propositions in general. This general effect of feedback could then be expressed in decreased general accuracy of recollections

in addition to sensitivity to misleading information when in co-witness discussions.

The observed effect of our false feedback manipulation is consistent with the findings of other studies (Allan et al., 2012; French et al., 2011; Gabbert et al., 2007), which have indicated that exposure to the input of others may lead to greater changes in memory or memory decisions when perceived reliability of the source is high. One potential implication is that acceptance of information from others may increase, and general reliance on own memory may decline, when perceived own reliability is relatively low. This may explain the previous finding where participants who were less accurate were more likely to change their responses when exposed to the responses of confederates (Wright & Villalba, 2012). More broadly, there is the implication that variance in associations between co-witness reliability and misinformation effects across studies may be a function of the moderating influence of the participant's own perceived reliability.

The results for analyses of the false feedback manipulation further suggested that event-specific memory was influenced by general cues to reliability. That is, memory for the video stimulus appeared to be significantly affected by feedback about unrelated performance on a test of general visual memory. This is in contrast to past studies (Allan et al., 2012; Wright & Villalba, 2012), which have provided cues to co-witness reliability by manipulating how the partner is exposed to, or responds to, the primary experimental memory stimulus that is the basis of discussion. The current study indicates that the tendency to accept information from co-witnesses may be related to general perceptions of reliability or credibility as opposed to, or in addition to, event-specific indicators of reliability. This could have implications for the relative risk of misinformation effects resulting from exposure to or discussion with sources of event-related information with high perceived credibility such as emergency responders, police investigators or the media.

Limitations

Some limitations of the study are noted. First, while manipulation checks indicated that participants who received relative low false feedback rated their partner's memory as significantly better than participants who received relative high false feedback, we nonetheless acknowledge that the feedback was not uniformly accepted by participants. Fewer than half of participants (46.7%) retrospectively reported beliefs about their partner's memory performance that was directly aligned with the false feedback received, with the majority of the remainder (44.3%) expressing beliefs that their partner's memory was about the same as theirs. One potential account for this finding relates to the design of the feedback manipulation in this study. The 'relative low' memory score was still in the range of average scores according to the provided normative data; thus some participants may have felt that their memory ability was broadly similar to their partner's or not sufficiently low to necessitate reliance on the recall of their partner.

Perhaps more likely, our manipulation check comprised a global retrospective rating of the partner's relative memory that may have been influenced by factors other than the false feedback alone. For example, participants may have accepted the feedback but subsequently moderated their beliefs through observation of their partners in the co-witness discussion phase. Considering that the false feedback condition nonetheless had a significant impact on acceptance of misinformation, there is the potential that a priori beliefs about a co-witness's reliability may have additive or interactive effects with judgments about the co-witness's reliability inferred from discussion about the target event itself. This could be related to previous findings (Numbers et al., 2014) that quantitative variations in confederate reliability for event recall had only a limited impact on the extent to which misinformation was accepted.

In addition, participants' acceptance of the false feedback manipulation or perceptions of their partner's memory may have been moderated by baseline beliefs about their own memory capabilities. While not a key aim of the study, the results indicated that actual memory performance on Family Pictures I and II was significantly inversely associated with acceptance of misled propositions in the recall task ($r = -.27$, $p = .003$; $r = -.22$, $p = .02$, respectively). This is consistent with previous indications that people who are more accurate on eyewitness memory tasks are also less like to conform to misleading information for the same stimuli (Wright & Villalba, 2012). A possible implication is that feedback about the partner (about which the participant has less prior knowledge) may be more influential than feedback about the participant themselves. It is noted that these factors might influence the uniformity of acceptance of false feedback, and therefore the expected effect size of the manipulation, but would not be expected to substantially influence the direction of results given that actual memory abilities of participants were randomly distributed across conditions as a result of the experimental design. This finding of actual memory ability impacting acceptance of misinformation following a discussion is worth exploring further to determine whether this ability impacted believability of the feedback manipulation and thus subsequent misinformation susceptibility.

Another limitation relates to the use of open discussion between participant dyads as the method of disseminating misleading information. While such dyads are relatively ecologically valid for co-witness discussions, it may have resulted in less frequent or focused sharing of potentially misleading propositions compared to other approaches such as use of confederate partners. Consistent with this, the recorded number of misleading propositions in open recall was low on average among participants in this study. It is noted that participants were not directed to discuss particular subjects

together, and their discussions were not recorded, which prevented us from drawing a direct link between the misleading information discussed and the results of later memory testing. Future research may improve on this design by providing participants with cues for discussion (e.g. French et al., 2011) and using recorded discussion content as a covariate in analysis of results.

Finally, it is acknowledged that the study having a relatively modest sample size limited the power of analyses, particularly in relation to the critical interaction between video type and false feedback conditions. In addition, acceptance of the false feedback manipulation may have been affected by the use of university students as participants, who may be expected to have relatively high actual memory ability or subjective perceptions of their own memory performance. Future research would be beneficial to further elucidate the influences of participant and co-witness reliability on outcomes by increasing power to detect effects, and including a more diverse range of sample demographics (e.g. larger age range) and event memory tasks that provide a greater range of variance in performance across participants.

Conclusion

The current study aimed to expand on existing research on co-witness misinformation effects by examining how false feedback about the general memory performance of both the participant and their partner influenced event-specific memory for a simulated crime. While there were indications that individuals may consider various cues in assessing their and their partner's relative reliability, the results showed that manipulation of beliefs about general relative memory performance between co-witnesses have a role in sensitivity to event-specific misinformation. This study contributes to evidence for the risk that contamination across witnesses can pose to the veracity of

memory, and highlights the need to consider the influence of cues about general reliability or credibility of witnesses when making efforts to remediate the potentially deleterious effects of misinformation on judicial processes.

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Ethical standards

Declaration of conflicts of interest

Lauren A. Monds has declared no conflicts of interest.

Mark Howard has declared no conflicts of interest.

Helen M. Paterson has declared no conflicts of interest.

Richard I. Kemp has declared no conflicts of interest.

Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent

Informed consent was obtained from all individual participants included in the study.

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ORCID

Lauren A. Monds <http://orcid.org/0000-0002-2592-7238>

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