Resistance to the Influences of Others: Limits to the Formation of a Collective Memory Through Conversational Remembering

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SUMMARY

People often form collective memories by sharing their memories with others. Warnings about the reliability of one conversational participant can limit the extent to which conversations or other forms of postevent information can influence subsequent memory. Although this attenuation is consistently found for prewarnings, there are substantial reasons to suspect that, by carefully manipulating both individual characteristics of the listener in a conversation and the dynamics of the postevent conversation, one can restrict the effect even prewarnings have on the influence a speaker might have on the memory of a listener. Indeed, in situations in which a speaker contributes substantially to a conversation and the quality of memory of a listener is poor, prewarnings have the paradoxical effect of increasing the influence of the speaker on a listener's memory. Warnings may not always limit the formation of a collective memory. Copyright © 2009 John Wiley & Sons, Ltd.

In the last few years, psychologists have begun to contribute to the burgeoning social science literature on collective memory (Hirst & Echterhoff, 2008; Hirst & Manier, 2008; Middleton & Edwards, 1990; Weldon, 2001; Wertsch, 1998). First discussed by Halbwachs (1925/1980), the topic has garnered intense interest mainly because collective memories can serve as the foundation upon which a group can build its collective identity (Olick, 1999). The study of collective memory, then, could be viewed as a 'collective' variant of the study of autobiographical memory. The latter studies the relation between individual memories and individual identity; the former the relation between shared memories and collective identity (Hirst & Manier, 2008; Conway & Pleydell-Pearce, 2000; Manier & Hirst, 2009). Our interest here is not in this relation. Rather we are interested here in how initially individually held and distinctive memories become shared across a group. This question is important to the study of collective memory inasmuch as a memory must be shared across a group before it can properly be said to bear on the identity of the group.

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APPROPRIATION, CONVERSATIONAL REMEMBERING AND COLLECTIVE MEMORY

Wertsch (1998) has argued that there are at least two processes underlying the formation of a collective memory: *appropriation* and *resistance*. We focus here on how these processes unfold in conversational remembering, a widely-recognized, important and common medium through which a collective memory can be formed (Echterhoff & Hirst, 2002; Hirst & Echterhoff, 2008). When it comes to conversational remembering, psychologists have largely studied appropriation, which refers to 'taking something that belongs to others and making it your own' (Wertsch, p. 53). This work has mainly involved the effect of postevent information on subsequent remembering and has been investigated under the rubrics of social contagion or memory conformity (see Hirst & Echterhoff, 2008; Loftus, 2005, for reviews). It clearly establishes that one participant in a conversation can implant a new memory or alter an existing memory in other members of the group (Cuc, Ozuru, Manier, & Hirst, 2006; Meade & Roediger, 2002; Gabbert, Menon, & Allan, 2003; Gabbert, Menon, Allan, & Wright, 2004; Wright, Self, & Justice, 2000). Although this literature has chiefly treated the postevent information effect as eliciting changes in individual memory, the effect has a direct bearing on the formation of collective memory, especially when the postevent information is embedded in a social exchange such as a conversation (Cuc et al., 2006). A speaker, for instance, can impose her rendering of the past onto listeners, thereby leading speaker's and listeners' initially distinctive memories to become more similar. Moreover, the speaker's influence can become widespread if she addresses a large number of people or if a chain of influences is set up, with a speaker reshaping the memory of a single listener, who, in turn, becomes a speaker who can influence another listener. Studies of the epidemiology of beliefs and the spread of beliefs across a network suggest that this mode of transmission could lead to a widely held memory (Sperber, 1996; Watts, 2003).

In focussing on the consequence of postevent information on subsequent remembering, the extant research on appropriation has largely treated individual differences that may exist among members of the group or the dynamics of the conversational remembering as 'noise'. This neglect is unfortunate, as the few studies that have made the effort to examine individual differences and conversational dynamics among group members indicate. For instance, in their examination of the dynamics of conversational remembering, Hirst, Manier and their colleagues observed that one person often dominates the recounting, an individual they referred to as the *dominant Narrator* (Hirst & Manier, 1996; Hirst, Manier, & Apetroaia, 1997). Cuc et al. (2006) followed up on this observation and established that the presence or absence of a dominant Narrator influenced the content of the postgroup collective memory. When a dominant Narrator is present in a group recounting, the collective memory formed through the conversation converges on the Narrator's pregroup rendering of the past. However, when there is no dominant Narrator, the postgroup collective memory focuses on those pregroup memories that were shared by all participants before the conversation. How we talk collectively affects how we subsequently remember.

RESISTANCE AND CONVERSATIONAL DYNAMICS

This paper extends Cuc et al.'s (2006) work on appropriation and conversational dynamics to concerns about resistance, conversational dynamics and individual differences.

Resistance can be viewed as the opposite of appropriation. It refers to those instances in which members of a group actively refuse to 'make something their own'. People often resist because they do not want their past to be shaped by others. This resistance can be undertaken by one individual in a group, or by a group collectively. The group or the individual can vary in the success they can achieve in this effort. That is, there may be certain conditions under which resistance is more or less effective. We want to investigate what these conditions might be by further exploring conversational dynamics and by examining individual differences.

Although resistance has mainly been studied in the context of persuasion and attitude change (e.g. Knowles & Linn, 2004; Petty & Cacioppo, 1996), some psychologists have examined the phenomenon in the context of memory by investigating the effects of warnings (see Echterhoff, Hirst, & Hussy, 2005, for review). The warnings are usually about the possibility of misleading information being introduced into a conversation (or other forms of postevent narrative). The literature on warnings fairly consistently reports that prewarnings (a warning given before the postevent information) will diminish the proportion of false recognitions for the postevent misleading information (e.g. Greene, Flynn, & Loftus, 1982; McCabe & Smith, 2002; see also Wood & Quinn, 2003). Postwarnings (warning given after the postevent information) can also diminish false recognitions (Chambers & Zaragoza, 2001), but not as consistently as prewarnings (Belli, Lindsay, Gale, & McCarthy, 1994; Higham, 1998). Interestingly, postwarnings can not only reduce the proportion of false recognitions for misleading postevent information, but can also increase the incorrect rejection of old information that is repeated in the postevent narrative (Echterhoff, Groll, & Hirst, 2006).

Because the findings with prewarnings are the most robust, we will focus our efforts here on their effects. According to Greene et al. (1982), two of the most persuasive explanations for the effects of prewarnings on memory are that, in the presence of a prewarning:

(1) listeners may decide not to pay any attention to what the speaker says, or alternatively,
(2) listeners may increase their attention, specifically by making an effort to discriminate old from new information in the speaker's recollections. The assumption here is that, without a warning, listeners may accept, by default, that speakers are telling the truth (Blank, 1998; Grice, 1975). In this case, listeners should make little effort to discriminate old from new. The claim underlying (2) is that, with a prewarning, listeners may reject this assumption and monitor carefully for misleading information (Echterhoff et al., 2005).

Conversational dynamics are important in predicting the effects of prewarnings because they play a role in determining which of the two strategies—(1) or (2)—a listener will pursue. When the warned-against speaker is a dominant Narrator, it may become difficult for other participants to ignore what she says, without simply dropping out of the conversation. In such an instance, Strategy (2) should be preferred over Strategy (1). On the other hand, when the warned-against speaker is a non-Narrator, it may be much easier for a listener to ignore what she says, especially if the non-Narrator makes only a minimal contribution to the recounting. Under this circumstance, there simply is not as much cost in pursuing Strategy (1) than there is if the speaker is a Narrator. Conversational participants, then, should be more likely to pursue Strategy (1) when the warned-against speaker is a non-Narrator; Strategy (2) when she is a Narrator.

What is the effect of the different strategies on false recognitions? Here individual differences in mnemonic ability become important. When it comes to Strategy (1), mnemonic ability is not critical. If a listener does not pay attention to what the speaker says,

then the rate of false recognitions for the new information introduced in the group recounting should decline dramatically. In other words, if Strategy (1) is pursued, with a prewarning, conversational remembering should have a diminished effect on the formation of a collective memory. This prediction is consistent with the literature on prewarnings (again, see Echterhoff et al., 2005).

On the other hand, for Strategy (2), the effect of an increased effort to discriminate old from new depends on the quality of the memory of the listener. If the quality of listeners' memory for the original material is good, then the increased effort should lead to a decrease in the proportion of false recognitions, again, a prediction consistent with the extant literature. On the other hand, if the quality of the listener's memory is poor, then the listener may increase her attention to what the speaker recollects in an effort to distinguish old from new. This effort, however, will mostly fail, but not without consequences. Specifically, the effort the listener undertakes to monitor the speaker may lead to an increase in the likelihood that a lasting trace of the new information is formed. In turn, the newly acquired trace could lead to an increase in false recognition, exactly the opposite effect from what a warning is usually thought to accomplish.

The effect of prewarnings, then, may depend on the interaction between the narrative role of the speaker and the quality of the memory of the listener. That is, there should be a three-way interaction among Narratorship, Warnings and Quality. Just as the extant literature demonstrates, prewarnings would decrease the proportion of false recognitions for misleading information introduced by a speaker when the speaker is a non-Narrator or the quality of the listener's memory for the original material is good. On the other hand, contrary to the emphasis in the extant literature, prewarnings should increase the proportion of false recognitions if the speaker is a Narrator and the quality of the memory of the listener is poor. That is, prewarnings could have the paradoxical effect of increasing the influence of conversations on the formation of a collective memory.

In keeping with our interest in collective memory, in addition to examining the effects of conversational dynamics and individual differences, we will also examine not only false recognitions, but also probe directly for the formation of a collective memory, something many other studies on warnings do not do. We will examine the formation of collective memory not only by calculating the degree of convergence among the postgroup memories, but also by expanding the size of the group involved in the conversational remembering.

In order to test our predictions, we will manipulate memory quality by varying how elaborately participants can represent the to-be-remembered material. Following Bransford and Johnson (1973), we devised stories that are incomprehensible without an accompanying picture. We developed similar stories, but for each story, we altered details so that in the end we had four versions for each story. Each member of a group of four listened to different versions of a story, with two of the four listening to their version without an accompanying picture, the remaining two with an accompanying picture. After listening to the story, the group collectively recounted it and then received an individual memory test for the original material.

METHOD

Participants

Eighty adults, recruited by flyers posted across the Universidad de Belgrano campus, received the equivalent of US$15 in Argentinean pesos. They were divided into

twenty groups of four. No individual within a group knew any of the other individuals in the group.

Materials

We constructed four short stories with an average of 127 words (range: 117–133 words), written so that they were incomprehensible without an accompanying picture. (See Figure 1 and the Appendix.) Three were of our own devising; the fourth was a Spanish translation of a story found in Bransford and Johnson (1973).

Four versions of each story were constructed by changing specific details in them. For the story in Figure 1, depending on the version, the only victims on a demolition were
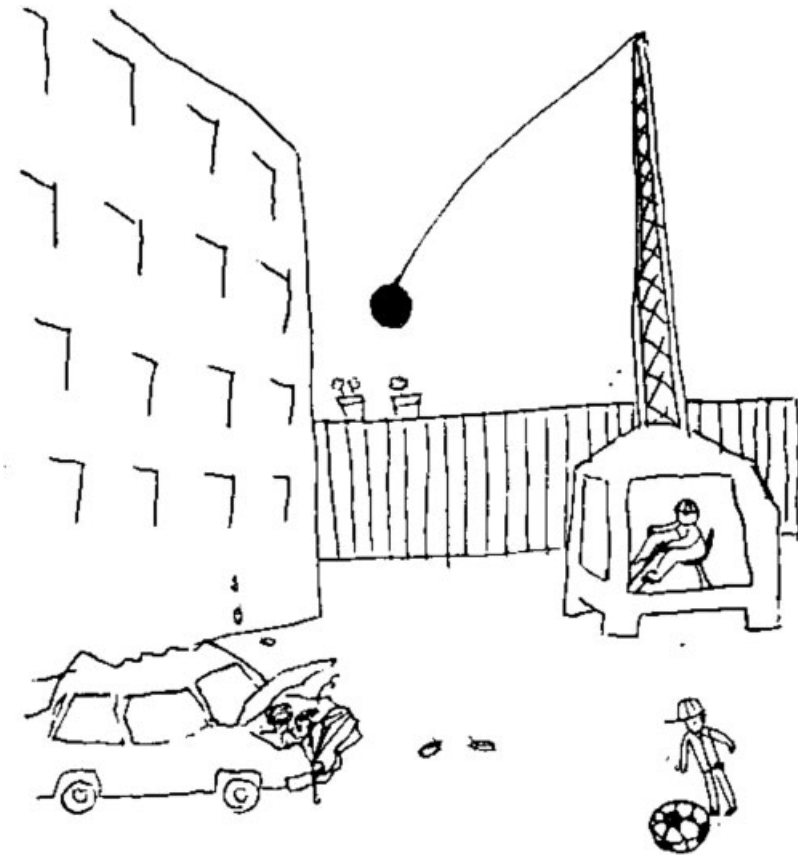

Figure 1. Example of stimulus story and accompanying picture.The coordination of movement between left arm and right arm and between left foot and right foot is necessary to produce the desired effect. The force of the hit depends on the adequate balance of the ball and the weight of the ball. The strength of the walls had to be considered also in this equation. Its structure and resistance would make the whole enterprise longer or shorter in time. Running out of fuel would cause the problem of postponing everything. But the work started some time before. People and their belongings were taken somewhere else. It seems that cockroaches are going to be the only victims. The car would be damaged but since it was abandoned, it was going to be an object that would have to be removed later

cockroaches, mice and rats, squirrels or waterbugs. We will refer to these different versions as *critical items*. Each story contained a different number of critical items, but there were 20 critical items across the four stories. A male native speaker of Spanish read and tape recorded the stories, and these tape recordings served as the stimulus material in the initial study phase.

The recognition task ending the experiment consisted of all 20 four-item forced choice probes. The recognition test was presented as a booklet in which there was one probe per page. The probes were designed by taking the sentence that contained a critical item, deleting the item, and then supplying the four different versions of the missing items. For example, one probe was 'According to the story you heard, which of the four items below is the correct alternative for the sentence 'It seems that . . . . . . are going to be the only victims': (a) cockroaches; (b) waterbugs; (c) squirrels; (d) mice and rats'. In addition to circling the 'missing item', subjects were asked to specify how confident they were of their choice, on a 1 to 6 scale, with 6 being most confident. The order of item in each recognition probes and the order of the probes themselves was randomly ordered and remained the same across participants.

Design and procedure

During the first session, the four members of a group listened to the four stories individually. Each group member was located in separate rooms and instructed as follows (in translation): 'You will hear four consecutive stories. You will have to remember as much as you can from these stories. Some of the stories are accompanied by a related picture. The picture will help you with these stories. You should listen to the stories while looking at the corresponding picture. For some you are not going to have a picture—you will have a blank page. In these cases just listen to the story. Only after the story has finished, can you turn the page and begin listening to the next story'. For each story, each member of a group heard one of the four versions of a story. The order of the stories was the same within a group, but varied randomly across groups. For two of the stories, the experimenter supplied the contextualizing picture, presented on an 8.5×11 inch piece of paper. For the other two stories, the experimenter laid down a blank piece of paper. We counterbalanced the presence of a contextualizing picture for a particular story across participants, as well as the pairing of a particular set of critical items with (or without) a contextualizing picture.

After this study period, participants were given 10 minutes distraction, in which they read an article from an Argentinean journal, and then were asked to recollect all four stories, in the order in which they originally heard them—'Recall the first story you studied. . ..Recall the second story you heard . . .' etc. No group had difficulty identifying which story was which. Participants wrote down their recollection. After participants indicated that they were finished, the experimenter asked them if that was all they could remember and urged them to write down anything else they might remember.

In the second session, a day later, the experimenter designated prior to the session the 'Warned-against' member. This individual possessed the highest number of contrasting items free recalled in Session 1. After all members had assembled for Session 2, the experimenter first placed the three 'trustworthy' participants in a large room, introduced them to each other, and instructed in a confessional tone: 'Listen, I made a mistake yesterday, and I gave a wrong tape to the member of the group who will soon join us. So, you have to consider what she/he says about the stories very carefully, but please, don't tell

her/him anything about this because I want to continue running the experiment anyway, as if nothing has happened'. The experimenter then brought the 'Warned-against' participant into the room, introduced him or her, and then asked the assembled group to recount jointly the first story they had listened to the day before, again prompting the recall with the story order. The group was told to remember the story as accurately as possible and in as much detail as possible. At no time during the group recounting did a member of the group lead the warned-against person to suspect that he was so designated. Debriefing further established that the warned-against person was unaware of her status. After finishing the recounting, an experimenter, who was present in the room throughout this session, urged them to recall any other detail they could. Only after the group protested that there was nothing else they could recall were they instructed to recall the next story they heard the day before. The procedure was repeated until the group recalled the four stories in the order in which they had originally learned them. The session was tape-recorded. During the sessions, the experimenter was alert to any differences that might exist in the interaction between the various members of the group. None were observed.

In the third session, a day after the second session, participants recalled the stories in the order in which they had originally heard them, again with the experimenter prompting them with the order of the stories. Participants recalled the stories individually, following the procedure in Session 1. All the participants who heard the warning were reminded of the experimenter's mistake and asked to consider this error as they recalled the stories. After they finished with the individual free-recall, the forced choice recognition task was administered.

RESULTS

Although we asked participants to recall the story as part of the final memory test, they rarely recalled more than 5% of theirs or another participants' critical items, making any comparison across conditions difficult to interpret. Hence, we restricted our discussion here to the recognition data, reporting, in this order: (1) recognition accuracy, (2) confidence ratings and (3) convergence on a consensus memory. For two groups, the hit rate averaged across members was at least two standard deviations below the mean for the hit rate for all groups calculated across all conditions (where the hit rate is the proportion of correctly identified targets on the final force-choice recognition test). This poor performance (a hit rate below .22) is at chance levels. It suggested that members of the group either did not pay attention to the material during the study phase or during the conversation, or, if they did, that they nevertheless formed an abnormally poor, if any, memory for the material. While such poor performance might be expected from those group members who studied the material without a context, similar performance for those in the context condition makes it difficult to assume that the context manipulation worked for these groups. That is, all group members—whether they studied the material with or without context—found the material equally unmemorable. We focussed our analyses on the remaining 18 groups.

As noted, there were two types of targets in the recognition test: *shared items*, items repeated across the four versions of a story, and *critical items*, item varied across the four versions. Our chief interest is in the conditions under which a group recounting might mislead participants into remembering something they did not study. Although conversational recounting of a shared item might influence the subsequent recall of this item, presumably through rehearsal, an analysis of such an effect would complicate an

already complex discussion and would not bear meaningful on the predictions we made in the introduction. We, therefore, concentrate on the false recognitions associated with critical items. On average, 6.2 critical items were mentioned in the conversation, a large increase from what was observed in the final recall. We attribute this difference to the facilitation in remembering often attributed to group recountings (Weldon, 2001).

We divide false recognitions involving critical items into *critical false recognitions*, that is, instances in which the falsely recognized item was mentioned in the group recounting, and *random false recognitions*, that is, instances in which the falsely recognized item could not be found in the group recounting. We attribute a false recognition to the mention of a critical item in a group recounting if the proportion of critical false recognitions is significantly greater than the proportion of random false recognitions. To gather further support for our claims, we also compare the proportion of critical false recognition to the probability of falsely recognizing a critical item by chance alone. In order to make this comparison, we calculated, for each participant, the probability of selecting the critical item mentioned in the group recounting if the participant has no memory of what she studied originally or what occurred in the group recounting. That is, if [1−Hit Rate] is the probability of not correctly identifying the studied critical item in the recognition test, then the probability of selecting among the remaining three alternatives the critical item mentioned in the group recounting by chance alone is [1−Hit Rate] * (1/3), assuming that only one critical item was mentioned in the group recounting. However, more than one version of a critical item could possibly emerge in the group recounting (e.g. one participant may have said *waterbugs* in the group recounting, whereas another person may have said *cockroaches*). In such instances, the *Base Rate* is best determined by

$$\text{Base Rate} = (1 - \text{Hit Rate}) * [(\text{Number of Critical items Mentioned in Conversation})/3]$$

In our analyses, we will contrast the performance of listeners who originally studied the material with context with those who originally studied it without context. Moreover, we will identify the source of the misleading information (that is, the speaker) and classify her as either a dominant Narrator or a non-Narrator. We confine our analysis here to the non-Narrator with the lowest strength as Narrator inasmuch as listeners are most able to ignore a speaker if the speaker has a low strength as Narrator.

We followed the procedure outlined in Hirst and Manier (1996) in order to assess the strength as Narrator of participants and identified the dominant Narrator in a group recounting. Using the Hirst–Manier coding scheme, two independent judges, one of whom was naive to the experimental procedure and hypotheses, transcribed and coded the group recounting. After dividing the group recounting transcripts into 'narrative units', following Dritschel (1991) and Bangerter (2000), the judges identified narrative units. These units consisted of a subject (sometimes implicit) and a predicate and described a single 'state', 'action' or 'event'. They could include temporal tags and other descriptive phrases, but these phrases could not describe an additional state, event or action. The sentences 'they went to a lake' or 'she was a heavy smoker', which describe respectively a state and an event, are narrative units. The sentence 'they had a baby last year' would also be coded as a single narrative unit, inasmuch as the temporal tag 'last year' does not describe an additional action. On the other hand, 'he went to a cafe and to the house in the forest' would be coded as two narrative units because it entails two actions, i.e. going to a cafe and going to a house in the forest. Not every utterance in a transcribed discourse could be called a narrative unit. Metamemory statements, such as 'I don't remember', or overt requests for

assistance, such as 'What was his profession'? do not describe either an event or a state. Such utterances were treated as non-narrative units. Coders agreed in 95% of the cases, and discrepancies were resolved.

The conversational role of participants, in particular, that of Narrator, is determined on the basis of a participant's relative contribution of different types of structural units. This classification was done on a story-by-story basis. [It should be noted that while the Narrator might change from story to story, the warned-against group member remained the same.] According to the Hirst–Manier coding scheme, one determines the strength of Narratorship as follows:

> Strength as Narrator = ((the proportion of the participant's narrative units out of the total number of structural units she or he contributed to the conversation) + (the proportion of the participant's narrative units out of the total number of narrative units in the conversation))/2

This definition ensured that the putative dominant Narrator not only narrated more, but that her contribution to the conversation is perceived as narrative in nature. For each story, we identified the individual in a conversational recounting with the greatest strength as Narrator and classified him or her as the dominant Narrator. 84.2% of the dominant Narrators were participants who had originally studied the story with a context.

Following the standard analyses for group performance (Kashy & Kenny, 2000), we treated not the individual participants, but the group as our random variable. We calculated for each group values associates with the crossings of Narratorship, Warnings and Context. For instance, in Story 1, Participant A might have been warned against and emerged in the group recounting of Story 1 as the dominant Narrator. We assessed Participant A's ability to mislead the other participants by examining the critical false recognitions in the postgroup recognition test of the other participants. In doing so, we separated the critical false recognitions of those who had studied the story with context from the critical false recognitions of those who had studied the story without context. This division allows the relevant false recognition data to fill the cells corresponding to Warning by Narrator by Context and Warning by Narrator by No-Context. For the same story, Participant C could be identified as the Lowest Speaker. Participant C would also obviously not have been warned against. His ability to mislead the other participants was then determined and again broken into false recognitions of those who had studied the story with context and of those who had not. His false recognition data filled the cells corresponding to No-Warning by Lowest-Speaker by Context and No-Warning by Lowest-Speaker by No-Context. We proceed in a similar manner for Stories 2 through 4. The data for each group consists of the relevant measures averaged across the four stories. For two groups, the warned against group members was never the Lowest Speaker. We therefore had missing data in two of our groups, yielding 16 groups for analysis. Our results did not change if we replaced the missing cells with average scores and included the entire sample in our analyses.

Recognition

We first investigated whether recognition was better for stories studied with context than for stories studied without context. If we take as a measure of recognition performance (Hits—(all False Alarms)), we find that memory for the stories studied with a context (M = 0.27; SD = 0.07) was better than memory for the stories studied without a context (M = 0.10; SD = 0.07), $t(15) = 2.79$, $p < .02$, $d = 2.43$.

Table 1. Proportion of hits, random false recognitions (RFR), critical false recognitions (CFR) and base rate performance (BR) as a function of the presence of a warning about the source and whether the listener studied the story with or without context

				CFR	
	Hits	RFR	BR	No warning	Warning
Context	.59 (.14)	.17 (.13)	.11 (.02)	.11 (.16)	.23 (.12)
No Context	.45 (.15)	.16 (.11)	.12 (.02)	.38 (.17)	.36 (.26)

Note: Standard deviations are in parenthesis.

We then turned our attention to the question of whether the critical items emerging in the group recounting misled participants to falsely remember that they had studied these mentioned items. Table 1 contains the hit rates, random false alarm rates, critical false alarm rates and base rates as a function of the context in which the listeners studied the material. Whether or not the source of the false recognition was warned-against, we found a postevent misinformation effect when the rememberer had studied the story without a context. This effect was detected when the proportion of critical false recognitions was significantly greater than the random false recognition rate (Warning: $t(15) = 2.60$, $p < .05$, $d = 1.52$; No Warning: $t(15) = 4.20$, $p < .01$, $d = 1.00$) and when the proportion of critical false recognitions was significantly greater than the baseline rate (Warning: $t(15) = 3.73$, $p < .01$, $d = 2.15$; No Warning: $t(15) = 6.67$, $p < .001$, $d = 1.30$). There was a suggestion of a postevent misinformation effect when the rememberer had studied the story with context, but it reached significance only when there was a warning and only when comparing the critical false recognition rate with the baseline, $t(15) = 3.83$, $p < .01$, $d = 1.39$).

In further analyses, we turned to our specific predictions about the effects of warnings and individual differences. As Table 1 illustrates and detailed analyses confirmed, there were no differences in the random false recognitions rate or the base rates across conditions. As a result, we streamlined our data analyses. Instead of calculating for each condition the difference between, for instance, critical false recognitions rates and random false recognitions rates, we compared the relative size of a postevent misinformation effect across conditions by contrasting the proportion of critical false recognition associated with each condition.

In the introduction, we posited an interaction among the Narratorship, Warnings and Context (see Table 2). The context manipulation was designed to vary memory quality. In a three-way ANOVA with Narratorship, Warnings and Context as factors and critical false alarms as the dependent variable, we found significant main effects for Narratorship, $F(1,14) = 9.98$, $p < .01$, $\eta_p^2 = .42$, and for Context, $F(1, 14) = 28.81$, $p < .001$, $\eta_p^2 = .67$, as well as significant interactions between Narratorship and Context, $F(1, 14) = 5.51$, $p < .05$, $\eta_p^2 = .28$, between Narratorship and Warnings, $F(1, 14) = 6.29$, $p < .02$, $\eta_p^2 = .34$ and, importantly, among Narratorship, Warnings and Context, $F(1, 14) = 10.62$, $p < .01$, $\eta_p^2 = .43$.

In order to explore the above interactions, we undertook two two-way ANOVAs with Warnings and Context as within-group factors. The first ANOVA focussed on the critical false recognition rate when the source was the speaker with the lowest level of Narratorship. Here we expected that participants would ignore the speaker when warned

Table 2. Proportion of critical false recognitions as a function of the context in which the listener studied the original story and the speaker's Narratorship and Warnings

| | Speaker's Narratorship | | | |
| | Dominant Narrator | | Lowest Speaker | |
	No warning	Warning	No warning	Warning
Context	.27 (.22)	.26 (.22)	.20 (.28)	.18 (.17)
No Context	.34 (.18)	.57 (.16)	.39 (.24)	.17 (.29)

Note: Lowest Speaker refers to the speaker with the lowest strength as a Narrator; standard deviations are in parenthesis.

against her and, consequently, warnings should decrease the proportion of critical false recognitions. We found a main effect for Context, $F(1, 15) = 5.64$, $p < .05$, $\eta_p^2 = .27$, a main effect for Warnings, $F(1, 15) = 6.49$, $p < .03$, $\eta_p^2 = .30$ and an interaction between Warnings and Context, $F(1, 15) = 7.37$, $p < .02$, $\eta_p^2 = .33$. In exploring this latter interaction, we found that when listeners had studied the stories with context, their critical false recognition rate did not depend on whether the source was warned-against or not. We expect that this finding may have arisen because of a floor effect. However, when the listener had studied the stories without context, their critical false recognition rate was lower when the source was warned-against than when it was not, $t(15) = 3.37$, $p < .01$, $d = .83$. Thus, when the source was the Lowest Speaker in the group recounting, warnings had the widely cited result of reducing the postevent misinformation effect.

The second ANOVA examined critical false recognitions when the source was a dominant Narrator. Here, warning should actually enhance the rate of false recognitions for participants who studied the stories without context. The results support this conjecture. We found significant main effects for Warnings, $F(1, 15) = 4.65$, $p < .05$, $\eta_p^2 = .24$, and for Context, $F(1, 15) = 38.60$, $p < .001$, $\eta_p^2 = .72$, as well as a significant interaction between Warnings and Context, $F(1, 15) = 18.70$, $p < .001$, $\eta_p^2 = .56$. When we examined the false recognition rates of those who had study the material in context, we failed to find a significant difference in these rates for warned-against sources and unwarned sources, again because of a possible floor effect. We did; however, find, as anticipated, a paradoxical difference between warned-against source and unwarned sources when the listener had studied the stories without context. Here the critical false recognition rate was actually greater when the source of the false recognition was warned-against, $t(15) = 4.99$, $p < .001$, $d = 1.35$.[1]

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[1]Inasmuch as some might wonder whether our results depend on the picture/context manipulation we employed, we examined the performance of those who had studied the stories with context separately. We divided these group members into those with or without a 'good memory' by calculating the median of the overall recognition performance for participants who studied the material without context. This median served as the threshold point for determining which member belonged to the 'good memory' group and which to the 'poor memory' group. We then analysed the data in a manner similar to that used when context was a variable. The pattern of results for this analysis mirrored the one we found when context was a variable. As with previous analyses, the telling comparison was for group members with a 'bad memory'. For this group, the standard warning effect was found when the source of the false information was a speaker with the lowest strength as a Narrator. That is, there were significantly *fewer* critical false recognitions with than without a warning. On the other hand, a reversal of the standard warning effect was found when the source of the false information was a Narrator. Now, there were significantly *more* critical false recognitions with than without a warning.

Table 3. Confidence ratings for critical false recognitions

| | Narratorship of source | | | |
| | Dominant Narrator | | Lowest Speaker | |
	No warning	Warning	No warning	Warning
Listener				
Context	4.85 (.89)	4.42 (.68)	3.67 (.45)	3.83 (.44)
No Context	3.17 (.72)	5.08 (.59)	4.75 (.53)	3.89 (.78)

Note: Confidence rating from 1–6, 6 being 'highly confident'; Lowest Speaker refers to the speaker with the lowest strength as a Narrator; standard deviations are in parenthesis.

Confidence ratings

Our chief interest in examining confidence rating is to determine whether they follow the same pattern we observed for critical false recognitions (see Table 3). We first conducted a three-way ANOVA, with Narratorship, Warnings and Context as factors. We found main effects for Narratorship, $F(1, 15) = 12.67$, $p < .01$, $\eta_p^2 = .39$, and for Warnings, $F(1, 15) = 16.23$, $p < 0.01$, $\eta_p^2 = .63$, as well as significant interactions for Narratorship by Warning, $F(1, 15) = 99.87$, $p < .001$, $\eta_p^2 = .84$; Context by Narratorship, $F(1, 15) = 26.32$, $p < .001$, $\eta_p^2 = .52$; Context by Warnings, $F(1, 15) = 5.14,$, $p < .05$, $\eta_p^2 = .67$ and Context by Narratorship by Warnings, $F(1, 15) = 47.42$, $p < .001$, $\eta_p^2 = .58$.

Again, we also conducted two two-way ANOVAs, with Context and Warnings as factors. The first ANOVA concentrated on those instances in which the source had the smallest strength as Narrator in the group recounting. In this ANOVA, we found a main effect for Context, $F(1, 15) = 12.02$, $p < .01$, $\eta_p^2 = .77$, and for Warnings, $F(1, 15) = 11.17$, $p < .01$, $\eta_p^2 = .58$, as well as a significant interaction between Context and Warnings, $F(1,15) = 12.38$, $p < .01$, $\eta_p^2 = .31$. In examining this interaction, we failed to find a significant difference between warned-against and no-warning sources when the listener originally studied the material in context, but did find a significant difference when he originally studied the material out of context, $t(15) = 3.78$, $p < .01$, $d = 1.29$.

The second ANOVA examined instances in which the source was a dominant Narrator. Again, there was a main effect for Context, $F(1, 15) = 29.10$, $p < .001$, $\eta_p^2 = .67$, and for Warnings, $F(1, 15) = 56.27$, $p < .001$, $\eta_p^2 = .65$ and an interaction between Context and Warnings, $F(1, 15) = 24.57$, $p < .001$, $\eta_p^2 = .61$. In the case of this interaction, although we had failed to find an effect for Warnings in this condition when examining critical false recognitions we did find the expected pattern when focussing on confidence ratings, with the confidence rating greater for a trustworthy source than an untrustworthy source, $t(17) = 2.15$, $p < .05$, $d = .54$. Thus, the increased scrutiny we are positing when the source is a dominant Narrator did lead listeners to take into account the prewarning when they possessed a relatively good memory for the original story. We also found the same paradoxical pattern for listeners who originally studied the material without context that we found for critical false recognitions: Confidence ratings were actually less for sources without a warning than for warned-against sources, $t(57) = 18.73$, $p < .001$, $d = 2.90$.

The results for confidence ratings generally parallel those for critical false recognitions. That is, when the critical false recognition rate increased, the confidence rate either increased or remained the same. It did not decrease. Such results are consistent with our

claim that participants were not 'guessing' when they made their recognition judgment, but truly recognizing the wrong probe.

Convergence

One way to assess whether the group recounting promoted the formation of a collective memory was to examine the number of different versions recognized by group members in the postgroup recognition test. Since group members each saw a different version of a critical item, then if the group recounting did not promote the formation of a collective memory, the number of recognized versions should be 4 in the postgroup member test, assuming perfect memory. The number should decrease with convergence.

We can separate those instances in which a critical item was mentioned in the conversation by a Narrator from those instances in which the source was a speaker with the lowest strength as a Narrator. Given that listeners can ignore what speakers say when their contribution to the conversation is minimal, for critical items introduced by speakers with a low strength as a Narrator, we would expect that warnings should diminish the extent of the convergence. On the other hand, for critical items introduced by a Narrator, listeners who studied the material with context may be able to avoid false recognitions when appropriately warned, but listeners who studied the material without context may be even more inclined towards false recognitions. Inasmuch as each group has two people who studied the material with context and two without context, when these contradictory forces are summed over the group members, the result may be, again, paradoxically, that a warning may actually increase convergence. At the very least, warnings should diminish convergence when the source of a critical item is a Narrator more than when it is a speaker with the lowest strength as Narrator.

We conducted a two-way ANOVA with Narratorship and Warnings as factors. The number of versions within a group was the dependent variable (see Table 4). There were main effects for Narratorship, $F(1, 15) = 4.52$, $p < .05$, $\eta_p^2 = .23$, and, as we just predicted, there was an interaction between Narratorship and Warnings, $F(1, 15) = 10.85$, $p < .01$, $\eta_p^2 = .42$. *Post hoc* analysis showed that when the source was the Lowest Speaker, warnings decreased the level of convergence, $t(15) = 3.94$, $p < .01$, $d = .93$. On the other hand, when the source was a Narrator, the presence or absence of a warning did not have a significant effect on the level of convergence, $t(15) = 1.77$, although there was a trend in the expected, but paradoxical, direction of a warned-against dominant Narrators promoting convergence, $p = .10$. Warnings do not always diminish the degree to which conversational remembering promotes the formation of a collective memory.

Table 4. Convergence by Narratorship and Warnings

	Speaker	
	Dominant Narrator	Lowest Speaker
No Warning	3.37 (.53)	2.70 (.62)
Warning	3.08 (.41)	3.20 (.44)

Note: The lower the number the greater the convergence; Lowest Speaker refers to the speaker with the lowest strength as a Narrator; standard deviations are in parenthesis.

GENERAL DISCUSSION

The effects of prewarnings on the influence a speaker has on the memory of a listener is not as straightforward as the literature suggests. Prewarnings are thought to lead listeners either to ignore what the speaker says or, if still engaged in the conversation, to process more effortfully what is said, now carefully trying to discriminate old from new. The literature to date has been so consistent and persuasive that there has been little doubt among scholars that prewarnings should diminish the postevent misinformation effect. However, researchers have rarely examined either the quality of the listener's memory or conversational dynamics.

The present study indicates that both factors are important. Although individual members of a group heard the same material, we manipulated the quality of the memory they had of the misleading material by supplying or not supplying a contextualizing picture. Without the contextualizing picture, group members' memory of the original stories was quite poor.

For listeners with a relatively good memory, we found an effect of warning, but only in terms of confidence ratings: Warnings decreased their confidence in their critical false recognitions when the source was a dominant Narrator. Although the expected change in critical false recognitions may have emerged if we had increased the retention interval, the change in confidence ratings alone establishes the frequently documented effect that warnings can diminish the size of the postevent misinformation effect.

As for listeners with a relatively poor memory, the effect of warning depended upon the conversational role of the warned-against individual. When a warned-against speaker had the lowest strength as a Narrator in the group, we found the 'usual' effects of prewarning: the warned-against members were less able to impose their renderings of the past onto the other group members than were the other members. The opposite pattern was observed when the warned-against speaker was the Narrator. Now, the warned-against members were more likely to impose their renderings of the past onto the other members. This pattern probably did not arise because of a guessing strategy: confidence rates for the falsely recognized misleading information were either increased or at least remained unchanged as the proportion of false recognitions increased.

Along the same lines, the present study also established that although a prewarning diminished the extent to which a conversation about the past promotes the formation of a collective memory, it also showed that prewarning are not always effective in limiting conversation's effect on collective memory. When the source of misleading information was a dominant Narrator, a warning did not inhibit the formation of a collective memory. This result probably reflects the composition of the groups used in this study, with half of the member holding a poor memory of the original material; half, a good memory. A different configuration of members with good or bad memories would have yielded different results. Nevertheless, the findings indicate that if at least the majority of members possess a poor memory, a prewarning has no effect on the extent to which a conversation can promote the formation of a collective memory.

One question arises when considering the contribution of narrative role. We defined the narrative role of participants in terms of the overall contribution to the conversation. How can a listener both monitor a speaker carefully throughout the conversation because he is a dominant Narrator, but only know for certain that speaker is the dominant Narrator towards the end of the conversation? The answer probably rests in the way a conversational role is distributed across a conversation. To be sure, there may be conversations in which an

individual says little in the beginning of the conversation, but towards the end of the conversation, speaks a great deal. In this case, one might be tempted to say that the speaker adopts at least two roles in the conversation: as non-Narrator in the beginning and as Narrator at the end. In the now large number of conversations that Hirst and his colleagues have analysed in terms of narrative role, this distribution of Narratorship rarely occurs (e.g. Hirst & Manier, 1996; Hirst et al., 1997; Cuc et al., 2006). Rather what they observed repeatedly is that the individual who initially dominated the discussion tends to dominate the entire recounting. Of course, Hirst and his colleagues mainly examined short conversations. A shift in role may be more likely with longer conversations. But long or short, it seems reasonable for listeners to assume that a conversational participant will maintain the same role for a time period within a conversation and hence, can judge a participant's role early in a conversation (or conversational segment).

The circumstances that produced the paradoxical results of this study are, unfortunately, all too common in the world outside the laboratory. People often have at best a poor memory of the past, yet often mistrust authorities that attempt to tell them the 'truth' about it. They essentially warn themselves against the influence of the authorities. The mistrust they hold might be thought to be a defence against any attempt of an authority to construct a 'desirable', official collective memory. Our results indicate that the mistrust can produce just the opposite from the desired result.

Our emphasis here has been on prewarnings. We suspect, however, interactions between memory quality and conversational roles may also be important for postwarnings, although the exact nature of the interaction may differ from the one we observed here. The basic principle underlying the present research may be a general one: too often the study of conversational remembering, social contagion and the postevent misleading information effect has focussed on the effect of a manipulation (e.g. the presence or absence of a warning) on subsequent memory, leaving individual difference in conversational participants and the conversational interactions that mediate this influence in a black box. The present results establish that we need to uncover the black box and look at what is occurring inside. The results can be quite unexpected.

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APPENDIX A

List of Critical Items

Story 1

Version 1	Version 2	Version 3	Version 4
Floor	Apartment	Room	Building
Sound	Music	Voice	Message
Shout	Scream	Yield	Cry out
Less distance	Less height	Less space	Fewer obstacles
Lover	Guitar placer	Fiancé	Husband

Story 2

Version 1	Version 2	Version 3	Version 4
Strength	Height	Consistency	Width
People	Neighbours	Tenants	Dwellers
Cockroaches	Mice and rats	Squirrels	Waterbugs
Abandoned	Useless	Wrecked	Burnt

Story 3

Version 1	Version 2	Version 3	Version 4
Top floor	Building	Roof	House
Children	Men	People	Women
Tree	Bush	Flag pole	Cliff
Anxious	Uncoordinated	Flash moving	low
Future	Destiny	Situation	Direction

Story 4

Version 1	Version 2	Version 3	Version 4
Concentrated	Stay attentive	Focussed	Calm
Freezing	Panicking	Falling down	Tripping
Speed	Skill	Experience	Balance
Breakfast	Dinner	Lunch	Stomach pain
Accidents	Tragedies	Calamities	Catastrophes
Confusion	Dizziness	Alcohol	Distraction