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An analogue study of the effects of Psychological Debriefing on eyewitness memory

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Abstract

Sixty-one participants from the community participated in a randomised controlled trial of group debriefing to assess the effect of this intervention upon memory for a stressful event. Participants were randomly allocated to one of three groups: debriefing; debriefing with an experimenter confederate present (who supplied three pieces of misinformation to the group regarding the stressful event); and a no-treatment control. All groups were shown a very stressful video and were again reviewed after 1 month. Members of the debriefing group where a confederate provided misinformation were more likely to recall this misinformation as fact than members of the other two groups. The debriefing group was also more accurate in their recall of peripheral content than the confederate group. Across all groups, participants were found to be more accurate at central rather than peripheral recall yet more confident for incorrect memories of the video than correct memories.

Keywords: Central and peripheral memory; Memory confidence; Group debriefing

Introduction

In eyewitness situations, presenting misleading information to subjects often distorts memory. This area of investigation is now reaching maturity in non-clinical applications and has been termed the misinformation effect (Belli, Lindsay, Gales, & McCarthy, 1994; Loftus, Miller, & Burns, 1978; Zaragoza & Mitchell, 1996). There is evidence to suggest that a witnesses' memory of an event can be influenced by discussion of the event with other individuals who have borne witness to this same event (Memon & Wright, 1999). Studies of this phenomenon, known as memory conformity, have shown that witnesses who discuss the witnessed event amongst themselves often later mistakenly recall items acquired in their discussion (e.g., Gabbert Memon & Allan, 2003; Roediger, Meade, & Bergman, 2001). Hearing about someone else's report can also alter a person's confidence in their own report (Luus & Wells, 1994). For example, Wright, Self, and Justice (2000) conducted an investigation of the effect of misinformation delivered by another person upon people's memory

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reports. These researchers found that providing misinformation lowered accuracy whilst providing accurate information increased accuracy. They also found that while initial memories for an event were very accurate, once the event was discussed with another person most individuals conformed. Such an effect could possibly have ramifications for eyewitnesses following a traumatic incident where the witnesses are 'debriefed' by well-intentioned, and unsuspecting, counsellors. It is possible that misinformation and group conformity may increase the likelihood of creating a trauma 'myth' amongst those receiving debriefing but, and more importantly with respect to this study, may interfere with eyewitness testimony obtained by police directly after the event and in court during trial. This aspect of debriefing has never been experimentally tested. Therefore, the primary aim of the current study was to assess the effect of subtle misinformation given during Psychological Debriefing (PD).

Some misinformation studies have examined the quality and confidence of memories resulting from misinformation. In one such study, Loftus, Donders, Hoffman, and Schooler (1989) assessed participants' self-reported confidence levels for misinformation, finding that falsely recognised items were more quickly accessed and most confidently held. Several other researchers have similarly noted that following exposure to misinformation participants display more confidence in their incorrect responses than in their correct responses (e.g., Ryan & Geiselman, 1991; Weingardt, Leonesio, & Loftus, 1994). It is suggested that following on from this and other research (e.g., Brainerd, Reyna, & Brandse, 1995) that such results may be obtained because true memories are based on unstable narratives while false memories are based upon relatively stable 'ideas'. As such, a second aim of the current study was to examine whether individuals' confidence ratings differ for an untainted memory compared to memories influenced through misinformation giving during debriefing. Additionally, a person's confidence in relation to whether the recalled memory was correct or incorrect was also investigated.

Certain conditions influence the misinformation effect, where eyewitnesses are more likely to remember and are less susceptible to misleading post-event information about central rather than peripheral details of an event (e.g., Christianson & Loftus, 1991; Roebers & Schneider, 2000). In an investigation of the ease in which peripheral and central memories can be altered through misinformation, Heath and Erickson (1998) demonstrated that it is more difficult to alter a memory for a central detail from a series of slides depicting a crime, than a peripheral detail.

In order to extend the research in this area, the third aim of the current study was to investigate memory for central and peripheral details of an event, and to also examine the effect of misinformation upon memory for these details.

Prior studies of memory conformity have typically presented co-witness information by incorporating it into a recall questionnaire (see Hoffman, Granhag, Kwong See, & Loftus, 2001). As such, no 'live' interactions take place, which is frequently far removed from the reality of witnessing situations. Therefore, to overcome this short-coming in the literature, a confederate was used in the current study to present the misinformation.

As previously discussed, several studies have examined the effect upon memory of a witness talking to another witness about an event. PD has become a frequently utilised intervention for various types of workers involved in traumatic situations (e.g., Armstrong, O'Callahan, & Marmar, 1991; Dyregrov, 1989; Mitchell, 1983) with Critical Incident Stress Debriefing (CISD) the most widely accepted and commonly used PD intervention (Everly, Flannery, & Eyler, 2002). No published study, however, has ever examined the effect of group debriefing and the related possible provision of misinformation by other group debriefing members, upon an individuals' memory for an event. Therefore, in order to address this deficit in the literature, the impact of group debriefing upon individuals' memory of an event was examined. It has been hypothesised elsewhere (Devilly, Gist, & Cotton, in press) that overhearing previously unconsidered or unnoticed details during a debriefing session may cause the individual to re-evaluate details of the event and estimations of the degree of threat that they were under during the event. However, while it has been shown that overhearing conversations leads to opinion change (Walster and Festinger, 1962), particularly when not counter-attitudinal (Brock and Becker, 1965), it has yet to be shown that misinformation can be transferred at all during these debriefing sessions.

In the current analogue study, participants were shown a stressful video of paramedics attending the scene of a car accident. After viewing the video participants received one of three conditions: debriefing; debriefing in a group with a confederate who provided misinformation; or no debriefing. Participants were assessed

immediately after this debriefing, and again 1-month later. The aims of the current study were to: (a) investigate memory for central and peripheral details of an event (i.e., viewing a stressful video of paramedics attending the scene of a car accident); (b) examine whether individuals' confidence ratings differ for an untainted memory compared to memories influenced through misinformation giving; (c) assess memory for central and peripheral details of an event and to examine the effect of misinformation upon memory for these details; and (d) to investigate the impact of group debriefing upon individuals' memory of an event. Based on eyewitness research, as discussed above, it was hypothesised that: (1) irrespective of condition, memory would be better for central rather than peripheral details of the video; (2) irrespective of condition, confidence would be greater for incorrect memories than for correct ones; (3) irrespective of condition, those provided with misinformation by the confederate would make more errors than those who did not receive this misinformation; and (4) that there would be no differences in the three conditions over time for: (a) central memory for the event; (b) peripheral memory for the event; (c) central memory confidence; (d) peripheral memory confidence; (e) confidence for correct memories; and (f) confidence for incorrect memories.

Method

Participant recruitment and group allocation

The sample comprised 61 individuals (34 male, 27 female) aged between 19 and 60 years ($M = 30.7$, $SD = 11.7$) recruited from a University through advertisements, who were randomly allocated to one of three conditions: debriefing, debriefing with confederate, or non-debriefing. The sample comprised mainly of University administrators, rather than students, although ethical requirements for the study precluded the collection of student and occupation status within the University. However, the overall mean age for the sample was 30.7 ($SD = 11.7$) with a median age of 26 years. Dyregrov's (1997) discussion on issues of group size was used for guidance so that 18 individuals (12 male, 6 female) aged between 20 and 58 years ($M = 27.5$, $SD = 12.0$), were allocated to the debriefing condition, with an average of 4.5 participants per group (range: 3–8 participants). In the debriefing with a confederate condition there were 22 individuals (11 male, 11 female) aged between 19 and 56 years ($M = 29.7$, $SD = 11.4$) with an average group size of 4.5 participants (range: 4–5), whilst in the non-debriefing condition there were 21 individuals (11 male, 10 female) aged between 20 and 60 years ($M = 34.6$, $SD = 12.0$) with an average group size of 5.5 participants (range: 3–8). All participants were recompensed for their time. Originally there were 62 participants who viewed the video however one participant failed to complete the follow-up assessment and was, therefore, excluded. As such, the attrition rate was very low at just 1.6%.

Measures

Two questionnaire sets were developed by combining the measures described below. The initial session questionnaire included demographic items, a word recall test, and a memory test of the video. The second 1-month follow-up questionnaire included a memory test of the video. Other administered questionnaires assessing emotional disposition are not reported here.

Demographics

General demographics were obtained using a questionnaire that asked questions related to age, sex, history of trauma and exposure to similar audio visual material.

Word recall

Participants completed an immediate word recall task in order to assess if any participants had major memory deficits, and to determine if differences in memory existed between the three groups. The word list used in the current study was taken from the Affective Lexicon of English words, and was matched for word length and frequency of usage in the English language (Bradley & Lang, 1999). Groups were read a 16-word list, consisting of four negative, four positive, four neutral and four general threat words. Once the word list was read out loud, participants were asked to recall and write down as many words as they possible could.

This was conducted to assess for pre-intervention differences which could explain the results independent of experimental manipulation, and was not used as a precondition for entry into the study.

Memory of video

A questionnaire was developed for the purpose of this study which evaluated participants' recollections of the video. A series of 25 questions were asked—each requiring the participant to recall a detail that was shown on the video (for example, ''How many ambulances were present?''), and to then indicate how confident they were that this answer was correct (1 = *not at all*, through to 5 = *extremely*). Thirteen of the questions related to details that were central to the victim focus in the video (e.g., ''How many injured (not dead) victims were there?''), whilst 12 questions related to peripheral details (e.g., ''How many police motorcycles were present?''). Three of the 25 questions directly corresponded to the three pieces of misinformation, with one of these pieces of misinformation being classified as central (and included in the 13 central questions), and two of the pieces of misinformation being classified as peripheral (and included in the 12 peripheral questions).

In order to check our classification of questions as 'central' and 'peripheral', the questions were rated by 12 independent judges. The judges were four males and eight females, aged between 20 and 37 years of age. Of these 12, two of the individuals (16%) highest level of education was to 16 years old, four (32%) had completed an undergraduate degree, four (32%) had completed Honours, and two (16%) had completed a Ph.D. or a Doctorate. The judges were shown the video of paramedics attending the scene of a car accident. They were then provided with the following definitions of what constituted a central detail of the video, and what constituted a peripheral detail: *Central details*—any facts or elements directly related to the victims in the video. These are not background details; *Peripheral details*—any information associated with the event that is not directly related to the victims. This information includes background details.

The judges were asked to read each of the 25 video memory questions and to rate on a 6-point Likert scale (1 = central, 6 = peripheral) how much each of the questions related to a central or a peripheral detail of the video. Thirteen questions were rated by the judges as being central with a mean of 1.95 (95% *CI:* 1.48–2.42; SD = .74), median of 2.0, and mode of 1. Twelve questions were rated as being peripheral, with a mean of 5.47 (95% *CI:* 5.25–5.69; SD = .34), median of 5.58, and mode of 6.

Setting and procedure

Each trial was conducted in a single meeting room containing a central conference table and non-fixed seating for 10. The audiovisual stimulus was projected onto a wall that was in close proximity, allowing the participants to feel as though they were immersed in the accident scene. The room also contained an area to facilitate provision of refreshments. This setting was maintained for all groups.

Participants were informed about the experiment, and warned that if they had experienced a road traffic accident recently, or had lost friends/family members from a traffic accident, then they may be best served not taking part in the research, before then providing informed consent. No participants withdrew.

The pre-video component of the questionnaire was then distributed, which included demographic questions. Once these were completed, participants were given the word recall test. Upon completion of the task, participants were informed that they would now be viewing a video of emergency workers attending the scene of a car accident. They were again reminded that some may find the video distressing and that they were free to leave with no obligation to complete the experiment. The lights were then turned off and the video started.

The video stimulus was 10 min of live footage following US emergency workers attending the scene of a single car road accident. The first 9 min the video focused on the assistance given to four surviving victims. While obvious that three of the victims were in pain and shock, there were no obvious indicators as to the extent or type of their injuries. Thus, for this portion of the video, viewers were exposed mainly to emotional and psychological implications of the accident, with no exposure to any high degree of physical trauma (such as open wounds, bleeding, etc.). The final minute of the video depicted the scene after removal of the surviving victims. In this section viewers witnessed the removal of the single fatality resulting from the crash. While previously, astute viewers may have noticed indications suggesting the existence of a fifth victim within the car, the final minute concentrated solely on the removal of this body from the car. A close-up of the disfigured head of the deceased was the focus for the final 5 s of the video.

At completion of the video, the lights were turned back on and debriefing groups (normal or with a confederate) were informed that they would soon receive a session of debriefing conducted by a trained psychologist in regards to the contents of the video. The facilitator directed them to help themselves to refreshments while she fetched the assigned debriefer (see below). Once the debriefer entered to the room, the intervention was delivered, with those in the debriefing groups receiving CISD (described in detail below). For the non-debriefed group, the facilitator informed participants that there would be a short break in proceedings and they were directed to help themselves to refreshments of tea, coffee, orange juice and biscuits. They were allowed to freely chat to one another.

Forty minutes later (after refreshments with or without debriefing) the post-condition component of the questionnaire was distributed. This assessed memory for aspects of the video and confidence of these memories. At completion of the questionnaire, participants in the non-debriefed group were also provided with contact details of the local psychologist and facilitator in case any further concerns or questions should arise following the session. All groups were then informed that 4 weeks later they would be sent a follow-up questionnaire together with a reply-paid envelope. A separate researcher who was described to the participants as the 'audio-visual expert' rated the debriefer for adherence to CISD, using a seven-stage template as elaborated upon below. The treatment adherence rating form had the assessor rate the therapist on a 6-point Likert-type scale for each of the seven stages of intervention. This rating judged both whether an aspect had been completed and whether it had been conducted competently.

Four-weeks after their participation in the study, participants completed and returned the follow-up questionnaire. This questionnaire contained the same video memory questions as those that were asked in the initial session.

Interventions

Debriefed groups (no misinformation)

Treatment groups were provided with a 40 min session of PD based on the seven-stage CISD model of debriefing, led by a psychologist specialised in the treatment of trauma reactions. Following an initial introduction and explanation of the rules (phase 1), participants were encouraged to talk about what they saw (phase 2), thought (phase 3) and felt (phase 4) about the video. Participants were then queried about experiencing any stress responses to watching the video (phase 5), after which components of the normal stress reaction were then discussed (phase 6). Finally, participants were asked if they had any questions regarding what they had just discussed, before being provided with the contact details of both the debriefer and the facilitator, in case any further issues, concerns or general questions arose following the session (phase 7). The confederate which gave misinformation in the 'confederate' group (described below) was also present during these debriefing sessions, but did not provide any misinformation and kept group participation to a minimum.

Debriefed with confederate groups (misinformation)

The same protocol as that detailed above for the debriefing groups was followed for debriefing with a confederate. The only difference was that during the debriefing session the confederate supplied misinformation to the group about central and peripheral details relating to the video. When asked to describe, "What they saw" on the video, the confederate stated: (a) that she had noticed "how the deceased's legs looked so limp in his *black trousers* when the paramedics moved him", when in fact he was wearing *dark blue trousers* (central misinformation); (b) that she "had noticed that there were a number of emergency workers attending the scene, with *some* people wearing white hard hats, some wearing blue and some wearing red", when in fact only *one* person was wearing a white hard hat (peripheral misinformation); and (c) that she "was amazed at the number of bystanders watching the events—even *two helicopters* were circling the accident, probably news reporters", when in fact *no helicopters* were shown on the video (complete misinformation).

Non-debriefed (control) groups

The non-debriefed control groups were invited to partake in refreshments, and left to chat amongst themselves for a period of 40 min. The facilitator remained in the room, but avoided overtly participating in

the groups' discussion. If drawn into conversation, the facilitator joined the discussion but endeavoured to not influence the flow of conversation.

Results

The results will be presented to test the hypotheses outlined in the introduction: 1, 2, 3, and 4(a)–(f). Statistical packages used were Statistica (version 6.1) and ClinTools (version 3.5).

Data cleaning and randomisation

To ensure that the randomisation process had not created any conditional bias, the three groups were compared across various background, presentation and demographic variables. Analytical assumptions were met, and the data was parametrically distributed with approximate homogeneity of variance. There were no significant differences between the three groups in the distribution of gender, previous exposure to similar styles of video, history of trauma, word memory recall ability ($F(2, 58) = .94$, ns), and group allocation sizes (see Table 1). Overall, these results suggest that the randomisation process did not lead to any systematic bias on core criteria within the group compositions (Debriefed vs. Confederate vs. Non-Debriefed) before the experimental phase.

A series of 3 (Condition) $\times$ 2 (Time) repeated measure ANOVAs were conducted on participants' video memory scores and confidences for these memories in order to address hypothesis (4). The results of these tests are shown in Table 2.

As can be seen in Table 2, passage of time was found to have a significant effect upon both central and peripheral memory with recall significantly better in session 1 than at follow-up. Similarly, passage of time had a significant effect for central and peripheral memory confidence, and correct and incorrect response confidence, with confidence significantly greater in session 1 than at follow-up in all conditions except for confidence in incorrect memories—which increased over time. Testing hypothesis (4b), Condition was found to have a significant effect ($F(2,58) = 4.77$, $p < .02$). Post hoc analysis using an unequal N HSD revealed a significant difference ($p < .02$) between the debriefed and confederate condition, with the confederate group recalling fewer correct peripheral details overall. However, as predicted, this effect did not apparently interact with Time (session 1 to follow-up). Means and standard deviations are presented in Table 3.

For hypothesis (1) paired samples t-tests revealed that, overall, participants recalled significantly more correct central details of the video than peripheral details in both session 1 ($t(60) = 8.21$, $p < .001$; $\hat{g} = 1.1$;

Table 1
Demographic characteristics of the sample[a]

	Debriefing $n = 18$ (%)	Debriefing with confederate $n = 22$ (%)	Non-debriefed $n = 21$ (%)	Total $n = 61$ (%)
Gender				
Male	12 (66.6)	11 (50)	11 (52.3)	34 (55.7)
Female	6 (33.3)	11 (50)	10 (47.6)	27 (44.3)
History of trauma				
Yes	5 (27.7)	3 (13.6)	5 (23.8)	13 (21.3)
No	13 (72.2)	19 (86.4)	16 (76.2)	48 (78.7)
Exposure to similar video				
Never seen similar	11 (61.1)	13 (59.1)	11 (52.3)	35 (57.4)
Seen similar/same	7 (38.8)	9 (40.9)	10 (47.6)	26 (42.6)
Mean (range) group size, number of participants	4.5 (3–8)	4.5 (4–5)	5.5 (3–8)	4.8 (3–8)
Mean (SD) age, years	27.5 (12)	29.7 (11.4)	34.6 (12)	30.7 (11.7)

[a]Unless otherwise indicated, data are given as number (percentage) of subjects. Percentages have been rounded.

Table 2
3 (condition) × 2 (time) repeated measures ANOVAs for video memory and confidence scores

	Time			Analysis		
	Session 1 *M* (SD)	Follow-up *M* (SD)		(df) *F*	*p*	Hedges' $\hat{g}$ (95% CI)
(4a)[a] Central memory for the event	6.79 (2.11)	5.84 (2.00)	Time (*T*) Condition (*C*) *T* × *C*	(1, 58) 20.48 (2, 58) .07 (2, 58) .28	<.001 ns ns	.46 (.10—.82)
(4b) Peripheral memory for the event	4.57 (1.51)	2.85 (1.36)	*T* *C* *T* × *C*	(1, 58) 49.0 (2, 58) 4.77 (2, 58) .23	<.001 <.013 ns	1.18 (.80–1.57)
(4c) Central memory confidence	38.31 (9.18)	31.23 (9.47)	*T* *C* *T* × *C*	(1, 58) 73.45 (2, 58) .16 (2, 58) .31	<.001 ns ns	1.03 (.66–1.42)
(4d) Peripheral memory confidence	35.31 (9.26)	28.46 (9.17)	*T* *C* *T* × *C*	(1, 58) 72.15 (2, 58) .00 (2, 58) .24	<.001 ns ns	.74 (.37–1.11)
(4e) Confidence for correct memories	40.56 (14.39)	20.31 (10.95)	*T* *C* *T* × *C*	(1, 58) 239.4 (2, 58) 1.04 (2, 58) .70	<.001 ns ns	1.57 (1.16–1.98)
(4f) Confidence for incorrect memories	36.11 (10.85)	39.34 (11.54)	*T* *C* *T* × *C*	(1, 58) 7.83 (2, 58) .57 (2, 58) .19	<.01 ns ns	−.29 (−.64–.07)

[a]Numbers and letter denote hypothesis being tested.

Table 3
Means and standard deviations for video memory scores, in session 1 and at follow-up

	Non-debriefed[a]		Debriefed[b]		Debriefed-confederate[c]	
	Session 1 $\overline{X}$ (SD)	Follow-up $\overline{X}$ (SD)	Session 1 $\overline{X}$ (SD)	Follow-up $\overline{X}$ (SD)	Session 1 $\overline{X}$ (SD)	Follow-up $\overline{X}$ (SD)
(4a)* Central memory for the event	6.90 (2.07)	5.95 (1.94)	6.78 (2.05)	5.61 (1.72)	6.68 (2.27)	5.91 (2.33)
(4b) Peripheral memory for the event	4.67 (1.56)	2.81 (1.33)	5.17 (1.20)	3.33 (1.50)	4.00 (1.54)	2.50 (1.22)
(4c) Central memory confidence	39.29 (9.65)	31.33 (10.88)	38.61 (8.84)	31.78 (9.55)	37.14 (9.78)	30.68 (8.32)
(4d) Peripheral memory confidence	35.81 (10.39)	28.19 (10.17)	35.06 (9.14)	28.61 (11.53)	35.05 (8.62)	28.59 (5.85)
(4e) Memories correctly recalled	11.57 (3.11)	8.76 (2.70)	11.94 (2.6)	8.94 (2.53)	10.68 (3.20)	8.69 (2.59)
(4f) Memories incorrectly recalled	13.43 (3.11)	16.24 (2.70)	13.06 (2.60)	16.06 (2.53)	14.32 (3.20)	16.59 (2.61)
(4g) Confidence for correct memories	43.33 (15.43)	21.24 (11.37)	41.94 (14.09)	21.61 (13.45)	36.77 (13.42	18.36 (8.16)
(4h) Confidence for incorrect memories	35.24 (10.58)	38.19 (13.87)	34.44 (10.34)	38.78 (9.58)	38.32 (11.61	40.91 (10.90)

Note: *Numbers and letter denote hypothesis being tested.
[a]$n = 21$.
[b]$n = 18$.
[c]$n = 22$.

95% *CI*: .72–1.48), and at follow-up ($t(60) = 10.37$ $p < .001$; $\hat{g} = 1.74$; 95% *CI*: 1.32–2.15). Paired samples *t*-tests were also conducted for hypothesis (2), with confidence greater, at follow-up, for those details of the video that were recalled incorrectly than those details of the video that were recalled correctly ($t(60) = -10.19$, $p < .001$; $\hat{g} = -1.68$; 95% *CI*: −2.09 to −1.27). However, when looking at session 1 (directly after having

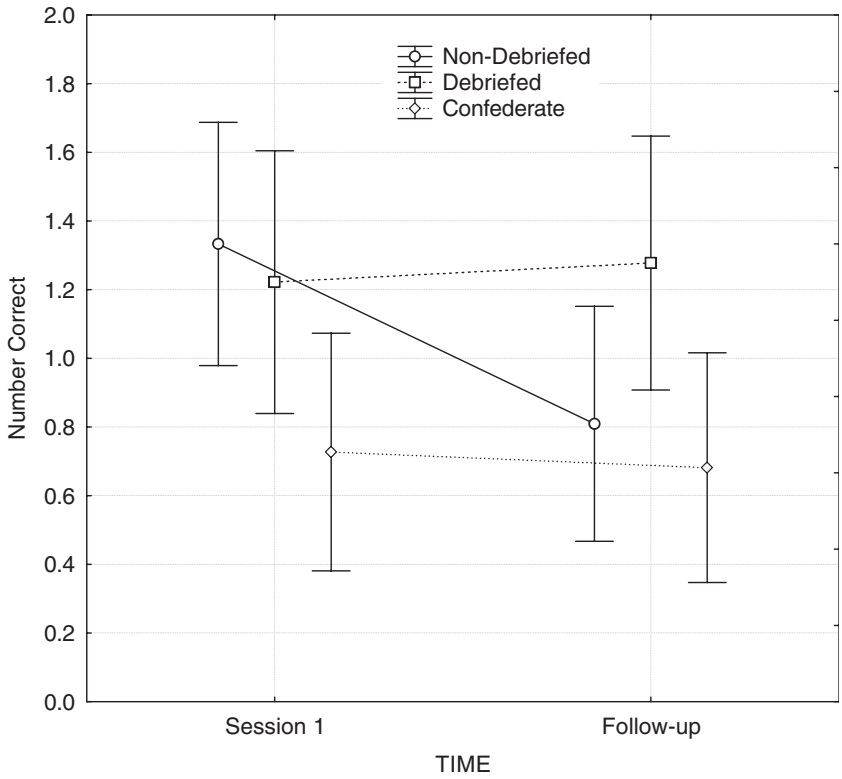

Fig. 1. Number of correctly answered misinformation items between the three groups over time. *Note*: Vertical bars denote .95 confidence intervals.

watched the video) a two-tailed dependant *t*-test did not quite reach significance ($t(60) = 1.89$, $p < .07$). Interestingly, this trend at session 1 was in the reverse direction, with more confidence in correct memories.

Misinformation

To test hypothesis (3), a repeated measures ANOVA was used to look at the number of correct responses to misinformation items. There was an effect for condition ($F(2, 58) = 3.37$, $p < .05$) with the Confederate group making fewer correct responses to the misinformation items overall. There was not a *significant* effect for Time ($F(1, 58) = 2.63$, $p < .12$), and only a trend for an interaction effect ($F(2, 58) = 2.88$, $p < .07$). It appears that those who were debriefed with misinformation were more likely to recall these items incorrectly later. This effect did not change over time. However, there was a trend for the Non-Debriefed group to demonstrate memory degradation over time but not for the Debriefed group. This is demonstrated in Fig. 1. Looking in more detail, it was the complete misinformation item (i.e. where the confederate said she observed two helicopters) which particularly differentiated the groups, with the Confederate group more likely to report seeing a helicopter than both the straight Debriefed and Non-Debriefed groups at session 1 ($\chi^2(2) = 7.75$, $p < .02$; *Cramer's Phi* = .36) and at follow-up ($\chi^2(2) = 8.02$, $p < .01$; *Cramer's Phi* = .36). At follow-up the Non-Debriefed group increased their number of incorrect responses to this item. The other two items did not show a differential memory effect at intake or follow-up.

Subsidiary analyses

The mean participant satisfaction rating with the debriefing (both conditions combined) was 4.52, with a median of 5 and a mode of 5, with 5 being the highest possible score. The mean therapist fidelity rating was 5.13, with a median of 5 and a mode of 5, with 6 being the highest possible score.

Discussion

The effects of group PD upon memory for an event, following viewing of an emotionally stressful video, were assessed in this analogue experiment. It was found that memory for both central and peripheral details of the video was better in session 1 than at follow-up, with no apparent effect from debriefing—whether provided misinformation or not. Participants in all groups recalled more central details correctly than peripheral details, in both session 1 and at follow-up, although there were again no differences between the groups. At follow-up, participants in all three groups were found to be more confident of memories for incorrect details of the video than for memories of correct details. As expected, those in the debriefing group with a confederate providing misinformation were more likely to report seeing phenomenon that they did not in fact observe (i.e. two helicopters circling overhead) than those in the debriefing or non-debriefing group. Recollection of this incorrect information was stable over time for the confederate group, with individuals who recalled the misinformation incorrectly in session 1 likely to recall this information incorrectly at follow-up also.

Overall, these results suggest that misinformation supplied by another member of a debriefing group can affect individuals' memories of a stressful event. This is consistent with findings of memory conformity studies in non-clinical scenarios (e.g., Gabbert et al., 2003; Memon & Wright, 1999). The results also suggest that individuals have greater confidence for memories that are incorrect than for memories that are correct, a finding which adds further weight to the results of other research examining confidence following the presentation of misinformation. The current results fall directly in line with the work of Gerrie, Belcher, and Garry (2006), who found that subjects confidently, but falsely, remember unseen information from an event. Together with past studies, this suggests that incorrect memories may be built upon stable, stereotyped ideas whilst the correct responses are built upon unstable narratives (e.g., Brainerd et al., 1995; Loftus et al., 1989; Ryan & Geiselman, 1991; Weingardt, Leonesio, & Loftus, 1994).

The finding that debriefed group members are susceptible to the effects of misinformation has important implications in relation to eyewitness testimony. It is common for individuals who have experienced a traumatic event to receive group debriefing immediately after the incident, often before even speaking to police officers. The current research suggests that it may be possible for debriefing group members to inadvertently alter other debriefing group members' memories of the event during the debriefing session. The results also suggest that once an incorrect memory is planted, this remains intact across time. Such memory alteration could in turn lead to inaccurate statements to police and have consequences for police investigations. This is particularly problematic because an errant consensus, which can arise from a single source, may be taken by police or jurors as a sign of accuracy (Wright et al., 2000). As one would expect, the debriefed group remembered more accurate peripheral material than the confederate group. This is expected since two of the misinformation items counted towards the peripheral score.

It is acknowledged that this research has limitations. A small amount of deception was involved in the research, with participants unaware that a confederate was present in the groups. However, this deception was necessary in order to investigate the effects of misinformation, the deception did not have any harmful consequences for participants, and all participants were made aware at the completion of the research that a confederate had been present during the initial session. In addition, only one therapist provided the debriefing. Although some may argue that it is desirable to counterbalance therapist effects by using many therapists, the use of a single therapist ensured that there was a systematic and consistent delivery of the intervention. The high satisfaction rating given by the participants tends to suggest that debriefing was conducted sensitively (and conforms to past research which found high satisfaction ratings with debriefing, e.g., Matthews, 1998). There was only one confederate used for all of the debriefing, and again it may be argued that it is desirable to weigh confederate effects. However, it was considered that using a single confederate controlled for more extraneous variables than would be introduced using a different confederate for each group. Finally, this study is an analogue study, and as such the generalisability of the findings to other populations will not be known until further field-based research is undertaken.

The results suggest that participation in group debriefing may alter group members' recollections of the event when one group member utters untrue memories of the events in front of the other group members. Furthermore, untrue recollections persisted and the eye witnesses reported increased confidence in these

erroneous recollections than in memories which were accurate. The effect of such misinformation upon the long-term stress levels of the witness is yet to be examined in full.

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