

The relationship between susceptibility to false memories, dissociativity, and
paranormal belief and experience.

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Abstract

One hundred participants completed a News Coverage Questionnaire concerning personal memories of where they were, what they were doing and who they were with when news footage of dramatic news events was first shown on television, as well as asking them to recall details of the footage itself. These news items included four events that are known to have been captured on film and one item concerning non-existent footage of the bombing of a nightclub in Bali. Overall, 36% of respondents reported false memories of the alleged footage of the Bali bombing. Participants reporting false memories were found to score significantly higher than those who did not report such memories on the Australian Sheep-Goat Scale, on various sub-scales of the Anomalous Experiences Inventory (Belief, Experience and Ability) and on the Dissociative Experiences Scale, supporting the hypothesis that believers in the paranormal may be more susceptible to false memories than non-believers.

Keywords : False memories; dissociation; paranormal belief and experience.

Introduction

In recent years a great deal of research has been carried out to investigate the phenomenon of false memory creation. Interest in false memory research largely began in the late 1980s and early 1990s with the explosion in cases of falsely recovered memories as a result of questionable therapeutic techniques (e.g., Loftus & Ketcham, 1994; Ofshe & Watters, 1994).

Experimental psychologists such as Loftus (e.g., 1993) have demonstrated the ease with which false memories of an event from childhood (e.g., being lost in a shopping mall) can be implanted. Such studies clearly show how fallible and susceptible to suggestion our memories can be. Researchers are currently developing new paradigms to investigate false memories. One such paradigm involves probing participants' memories for television footage of emotionally charged events.

Crombag, Wagenaar, and Van Koppen (1996), for example, questioned 193 people about the crashing of an El Al Boeing 747 into a block of flats in Amsterdam. The crash occurred on 4 October 1992, and respondents were questioned two months later. The crash was an extremely high profile and traumatic event and was headline news for many days on Dutch television. However, there was no recorded footage of the actual crash. Participants were asked to complete a questionnaire about the crash and were told, "We want to test your memory for a particular detail of this disaster." The participants were told that they would be given three factual questions followed by "the test question" which concerned the length of time it took before fire broke out. The key question, however, (i.e., "Did you see the television film of the moment the plane hit the apartment building?") was presented as one of the factual questions. Crombag *et al.* found that 107 respondents (55%) reported that they had seen the

actual crashing of the plane into the apartment block. Furthermore, 82% of respondents completed the fourth question relating to specific details about the fire.

Intrigued by this finding, Crombag *et al.* were able to replicate the results with a second questionnaire distributed to a new set of respondents. In this second study, participants were asked to complete questions relating to highly specific details about the crash, e.g., at what angle the plane crashed into the building, and what happened to the plane after impact. In this case they found an even higher percentage of false reports. Of the 93 participants, 66% responded that they had seen the film footage and most of these participants were willing to answer the detailed questions relating to the crash. For example, of the 61 participants who answered this question, 67% were willing to describe the angle at which the plane hit the building.

This phenomenon has become known as “crashing memories”. In a similar experiment, Ost, Vrij, Costall, and Bull (2002) were able to replicate these findings using another traumatic and very public event. In 1997, Diana, the Princess of Wales, and her companion, Dodi Fayed, were killed in a car crash in Paris. No film footage of the actual crash has ever surfaced and it is unlikely that any exists. In line with previous findings, Ost *et al.* found that of the 45 participants who had been asked if they had seen the *actual video footage* of the crash in which Diana and Dodi died, 44% (i.e., N =20) reported that they had seen the film.

It would appear that the crashing memories paradigm is a highly reliable method for fooling people’s memories. Almost any traumatic public event can be used to explore this phenomenon. Granhag, Stromwall, and Billings (2003), for example, found that

55% of respondents claimed to have seen non-existent film footage of the sinking of the Estonia Ferry. Ost, Hogbin and Granhag (in press) found that 39% of respondents claimed to have seen non-existent CCTV footage of the explosion in a Bali nightclub in which many tourists were killed, and most recently, Jelicic, Smeets, Peters, Candel, Horselenberg, and Merckelbach (2005) found that 66% of respondents erroneously claimed to have seen the actual footage of the assassination of the Swedish politician Pim Fortuyn and that 23% claimed to be able to describe specific details about the shooting.

Given the high numbers of erroneous responses, how are we to explain such intriguing results? Logically, it is plausible that such dramatic events might be captured on film, which might lead the respondent to make false claims. Therefore respondents may simply be *assuming* that they have seen the footage because it seems highly probable that they would have done so given the ubiquitous nature of the media. The widespread news coverage of such events is bound to lead people to imagine the scene in their mind's eye which in itself may lead to the formation of false memories via what has been referred to as the *imagination inflation* effect (Garry, Manning, Loftus, & Sherman, 1996).

Clearly the role of individual differences may be influential in determining the tendency to report false memories. It has been shown that a number of psychological variables correlate with susceptibility to false memories (see French, 2003, for a review). Dissociativity, for example, is often cited as being related to the development of false memories (Brown, Schefflin, & Hammond, 1997) and with memory suggestibility (e.g., Hyman & Billings, 1998). However, the findings with

respect to the relationship between dissociativity and susceptibility to false memories are somewhat mixed. Ost *et al.* (2002), for example, did not find any significant difference in scores on the DES between those who claimed to have seen the film of the Diana crash and those who did not.

Furthermore, it has been shown that several variables (including dissociativity, absorption, fantasy proneness and hypnotisability) that have been reported to correlate with susceptibility to false memories also correlate with both belief in the paranormal and tendency to report personal experiences of the paranormal (French, 2003). This raises the possibility that believers in the paranormal may show a heightened susceptibility to false memories compared to non-believers and, by implication, that at least some reports of ostensibly paranormal experiences may be based upon false memories. Although the relationship between susceptibility to false memories and belief in and experience of the paranormal has not always been confirmed in the relatively few published attempts to directly investigate this issue, such inconsistency may reflect the use of inappropriate paradigms (French, 2003). Therefore one of the additional aims of this study is to explore the potential relationship between susceptibility to false memories and paranormal belief/experience using a paradigm that has to date not been employed in investigating this issue.

In line with previous research, this study used a News Coverage Questionnaire (NCQ) asking for detailed answers to questions concerning footage of dramatic news events. These items included four known pieces of footage (e.g., the World Trade Center collapse) and a piece of non-existent footage, i.e., the supposed CCTV footage of the explosion in a Bali nightclub. Participants were also asked to complete the DES and

two questionnaires related to belief in and experience of the paranormal (i.e., the Australian Sheep-Goat Scale, ASGS, Thalbourne, 1995, and the Anomalous Experiences Inventory, AEI, Kumar, Pekala, & Gallagher, 1994). Intuitively, one might expect susceptibility to false memories to be more strongly correlated with reported experience of paranormal events than to paranormal belief. This is because a susceptibility to false memories might lead directly to the reporting of ostensibly paranormal experiences which are based upon false memories. Belief in the paranormal, on the other hand, may be based upon a number of reasons in addition to personal experience, including media coverage of paranormal topics and reports from trusted others (French and Wilson, in press).

Therefore, the main hypotheses of this study are (a) that a substantial minority of participants will report having seen an event that they could not possibly have witnessed (i.e., non-existent CCTV video footage of the Bali bombing); and (b) that those reporting such false memories will score higher than those who do not on the DES and on measures of belief in, and personal experience of, the paranormal (i.e., the ASGS and various sub-scales of the AEI). Furthermore, multiple regression will be used to assess the relative importance of dissociativity, and belief in and experience of the paranormal in predicting susceptibility to false memories.

Method

Participants and design

One hundred respondents participated in the study. There were 58 females and 42 males. The mean age was 33.4 years (SD = 9.87) with a range of 23 to 52 years.

Participants included undergraduates and employees from Goldsmiths College, and others were recruited from an advertisement on the internet asking for participation in a memory test on current events.

Materials

The following four questionnaires were administered in pencil-and-paper form in the order given below:

The Australian Sheep-Goat Scale (ASGS, Thalbourne, 1995): The ASGS is designed to measure belief in, and alleged experience of, the paranormal. It consists of 18 items that all relate specifically to the three core concepts of parapsychology: ESP (extrasensory perception), PK (psychokinesis), and life after death. Example items are “I believe I have personally exerted PK on at least one occasion” and “I believe in life after death”. For all items, the response options are “True”, “?” (i.e., don’t know) and “False” resulting in the a score of 2, 1 or zero points, respectively. Thus, the scale has a theoretical range from zero to 36, with higher scores indicating higher levels of belief and experience. The ASGS has been widely used and has proven reliability and validity (Thalbourne, 1995; Thalbourne & Delin, 1993).

Dissociative Experiences Scale: (DES, Bernstein & Putnam, 1986): The DES consists of a 28 item self-report questionnaire. A typical example would be: “Some people have the experience of finding themselves in a place and having no idea how they got there.” Respondents are asked to place a cross in a box to indicate what percentage of the time this happens to them, ranging from 0% to 100% at 10% intervals.

News Coverage Questionnaire (NCQ): This questionnaire was especially designed for this study and consisted of five news items each with a selection of specific questions concerning details of respondents' memories of first seeing the footage on television, e.g., "Where were you?", "Who were you with?", and "Where did you see the footage (e.g. which TV channel or website)?" These news items included four events that are known to have been captured on film: the video footage of the planes crashing into the World Trade Center in 2001, the video footage of the Hillsborough football stadium disaster in 1989, the statue of Saddam Hussein being torn down in Basra, Iraq, in 2003, and the footage of the Challenger space shuttle disaster in 1986. The NCQ also included an item (presented as the third of five) concerning non-existent CCTV footage of the bombing of a nightclub in Bali, which took place in 2002 ("Can you remember the first time you saw the CCTV footage of the explosion in the Bali nightclub in which many tourists were killed?"). Questions were also asked regarding the nature of the actual footage, for example, "Was the film footage in colour or black and white?", "Was there an audible commentary on the footage? If so, in what language?" and "How would you rate the picture quality of the original footage?" These questions were designed to ensure that those participants reporting false memories were actually basing their report upon a specific memory of viewing the non-existent footage, rather than just recalling the circumstances under which they first heard the news being reported.

Anomalous Experiences Inventory (Kumar, Pekala, & Gallagher, 1994):

Participants also completed a 70 item true-false questionnaire designed to investigate unusual, anomalous, and paranormal experiences, beliefs and abilities, as well as

including questions relating to drug and alcohol use and fear of the paranormal. The Anomalous Experiences Inventory (AEI), although not as widely used as the ASGS, has been shown to be acceptable in terms of its psychometric properties (see Gallagher, Kumar, & Pekala, 1994). The AEI provides different subscale scores relating to anomalous/paranormal experiences (Experience, 29 items), anomalous/paranormal beliefs (Belief, 12 items), anomalous/paranormal abilities (Ability, 16 items), fear of the anomalous/paranormal (Fear, 6 items), and use of drugs and alcohol (Drugs, 7 items).

Procedure

All participants were initially told that this was a study designed to test memory for news events. Participants completed the questionnaires and were then debriefed as to the real nature of the study. All participants were informed that no footage of the Bali bombing was thought to actually exist.

Results

Of the 100 participants who completed the questionnaire, 97 reported that they had seen the footage of the attack on the World Trade Centre, 30 reported having seen the footage of the Hillsborough football disaster in 1989, 72 recalled footage of the statue of Saddam Hussein being torn down in Basra in 2003, and 40 recalled the footage of the Challenger space shuttle disaster in 1986. Crucially, 36% of participants reported having seen the non-existent CCTV footage of the explosion in the Bali nightclub. This is consistent with previous research by Ost *et al.* (in preparation) who found a similar figure, i.e., 39.6%.

Additionally, of the 36 participants who claimed to have seen the non-existent footage, all but one (i.e., 97.2%) were willing to state where they were and who they were with when they watched the footage, and all but four (i.e., 88.9%) were willing to state upon which TV channel or web site they had seen the footage. Two-thirds could remember what they were doing immediately before they saw the footage and 26 out of 36 (72.2%) could remember what they did afterwards.

With respect to memories of the footage itself, the mean rating given for the clarity of the footage on a 7-point scale was 4.25 (SD = 1.68). For comparison purposes, clarity ratings for memories of footage for events that really had been filmed were compared for sub-samples reporting both the false memory and a memory for a real event. All participants reporting the false memory also reported seeing footage of the collapse of the World Trade Center, but memories of the latter were markedly clearer (for Bali bombing, mean = 4.25, SD = 1.68; for World Trade Center, mean = 6.39, SD = 1.05; $t(35) = 7.99, p < .001$). However, no significant difference was found in the clarity ratings for memories of the Bali bombing and the Hillsborough disaster for the 15 participants who claimed to remember footage of both events (for Bali bombing, mean = 4.60, SD = 1.77; for Hillsborough, mean = 5.07, SD = 1.87; $t(14) = 1.00, p = .334$). For the 30 participants who claimed to remember both the Bali bombing footage and the footage from Iraq, the latter memory was rated as clearer (for Bali bombing, mean = 4.03, SD = 1.67; for Saddam's statue, mean = 5.87, SD = 1.07; $t(29) = 6.46, p < .001$). Finally, no significant difference was found in the clarity ratings for memories of the Bali bombing and the Challenger disaster for the 15 participants who claimed to remember footage of both events (for Bali bombing, mean = 4.20, SD = 1.57; for Challenger, mean = 5.33, SD = 1.59; $t(14) = 1.77, p =$

.098). These differences in clarity ratings might partly be explained as a result of the passage of time, the Hillsborough and Challenger disasters occurring much earlier than the other events.

All but two of the 36 respondents who claimed to remember the non-existent footage (i.e., 94.4%) were willing to state whether the film was in black and white or colour, and 29 out of 36 (i.e., 80.6%) were willing to say in which language the commentary was spoken. For the 34 participants who provided a rating for the quality of the non-existent footage, the mean rating (on a 7-point scale) was 4.44 ($SD = 1.56$).

Given that a tendency to dissociate has been reported to correlate with susceptibility to false memories, it was hypothesised that those participants who claimed to have seen the non-existent footage would tend to score higher on the DES. This hypothesis was supported, with those reporting having seen the non-existent footage scoring 38.08 ($SD = 18.32$) on the DES compared to 29.34 ($SD = 15.12$) for those not claiming to have seen the footage ($t(98) = 2.57, p = .012$).

Those who reported remembering the non-existent footage were then compared with those who did not with respect to the various measures of belief in and experience of the paranormal that had been administered. With respect to the ASGS, those reporting that they had seen the footage scored significantly higher (mean = 19.00, $SD = 8.34$) than those who did not (mean = 12.81, $SD = 8.76$; $t(98) = 3.49, p = .001$). A similar pattern of results was shown for scores on three of the five subscales of the AEI. On the Belief subscale, those reporting memories of the Bali footage scored higher (mean = 7.06, $SD = 2.66$) than those who did not (mean = 4.70, $SD = 2.64$; $t(98) = 4.26, p <$

.001). On the Experience subscale, those reporting memories of the Bali footage scored higher (mean = 7.61, SD = 4.29) than those who did not (mean = 4.70, SD = 4.13; $t(98) = 3.33, p = .001$). Finally, on the Ability subscale, those reporting memories of the Bali footage scored higher (mean = 2.47, SD = 2.44) than those who did not (mean = 1.00, SD = 1.52; $t(50.61) = 3.28, p = .002$). No significant differences were found between the two groups on subscale scores for Fear of the Paranormal or Use of Drugs, and the two groups did not differ significantly in age.

In order to investigate the best predictor of this tendency to report false memories of an unseen event, a multiple regression was carried out with the answer to the question “Can you remember the first time you saw the CCTV footage of the explosion in the Bali nightclub in which many tourists were killed?” as the dependent variable.

Responses were coded as zero for “no” and one for “yes”. The predictor variables were the scores on the DES and the AEI subscales of Belief, Experience, and Ability.

The ASGS scores were not included in the multiple regression analysis for two reasons. First, as expected, ASGS scores correlated quite highly with some of the subscales of the AEI (with Belief, $r = .773$, with Experience, $r = .756$, and with Ability, $r = .606$; $p < .001$ in all cases). Thus inclusion of the ASGS would add little to the multiple regression analysis and may cause problems in terms of multicollinearity. Second, the main aim of the multiple regression analysis was to see which of the independent variables were important predictors of susceptibility to false memories using the crashing memories paradigm. The ASGS, although widely used, consists of a mixture of items relating to belief, experience and ability and would thus not be suitable for an analysis intended to distinguish between these factors.

A multiple regression was carried out using the simultaneous entry (ENTER) method. This analysis produced a value of .202 for R^2 , indicating that around 20% of the variance was accounted for by the independent variables (adjusted $R^2 = .169$). However, the F -value for the regression equation as a whole was significant ($F(4, 99) = 6.02, p < .001$). The only independent variable revealed as a significant predictor of the response on the Bali bombing question was the Belief subscale scores (standardised beta coefficient = .279, $t = 2.09, p = .04$), although a marginally significant result was noted for DES scores as well (standardised beta coefficient = .167, $t = 1.74, p = .085$).

Discussion

The present study investigated the relationship between belief in, and experience of, the paranormal, dissociativity, and the tendency to report false memories for a non-existent film of a dramatic news event. In line with previous research, it was found that a significant minority of participants (36%) reported having seen non-existent film of the Bali bombing. This not only replicates similar findings by Ost *et al.* (in preparation) but it clearly demonstrates that the crashing memories paradigm is extremely effective in creating false memories in a substantial minority of respondents (Crombag *et al.*, 1996; Ost *et al.*, 2002; Granhag *et al.* 2003; Jelicic *et al.*, 2005). It is not entirely clear, however, why this has been proven to be such a robust effect. One suggestion is that it may be that due to the ubiquitous nature of television news media, that respondents feel that is *likely* that they saw the footage. However, given the dramatic and often traumatic nature of the events, it is surprising that such a large minority claim not only to have seen the footage but also to recall specific details about the event.

In the current study, all but one of the 36 respondents (i.e., 97.2%) who claimed to recall the non-existent footage were willing to provide details of where they were and who they were with at the time. All but two (94.4%) were prepared to provide details of the footage itself, such as whether it was in colour, the language of the commentary and so on. It is worth noting that this is a higher proportion than that generally reported in previous studies. For example, in the study by Jelacic *et al.* (2005), of their 52 participants who claimed to remember non-existent film of the assassination of Pim Fortuyn, only 19 (36.5%) reported details of the footage, although higher percentages were reported by Crombag *et al.* (1996). The most obvious difference between these previous studies and the current study is that the former focussed on a single event whereas the current study included the false memory item amongst four other items relating to events that really had been filmed. Although purely speculative, it is possible that having to recall the footage relating to the preceding items in some way primed a generic schema for news coverage making it seem even more likely that footage for the Bali bombing did exist and that details should be available for recall. This is an interesting possibility that should be investigated systematically in future studies.

The clarity of the false memories was rated as being moderately high (4.25 on a 7-point scale). Clarity ratings for the false memory were compared with ratings for other memories of events that were known to have been filmed (for those participants who reported both the false memory and a memory for footage of a real event).

Interestingly, although participants rated their memories of the footage of the collapse of the World Trade Center and of the toppling of Saddam's statue as clearer than their false memory of the Bali bombing, the clarity ratings for memories of footage of both

the Hillsborough and Challenger disasters were no clearer than the false memory. There is always the possibility, of course, that some of the apparent memories for real footage were in fact themselves false memories but this issue cannot be directly addressed using the current paradigm.

A further important finding was that this study found an association between dissociativity and tendency to report having seen non-existent footage. At present it is unclear as to the precise mechanism for the relationship between dissociation and a tendency to report false memories, but it is plausible to suggest that people prone to dissociation may well have less confidence in their own memories as a result of their prior experience of lapses in memory. As a consequence, they may come to rely more on the use of external cues in deciding whether plausible apparent memories are real or not. Such an explanation clearly is in line with a view of false memories as examples of failures of reality monitoring (Johnson & Raye, 1981; Johnson, Hashtroudi, & Lindsay, 1993).

However, the most important finding and one that merits further investigation, is that those reporting false memories in this study scored higher on various measures of paranormal belief, experience and alleged ability than those who did not report such memories. Specifically, they scored higher on the Australian Sheep-Goat Scale and the Belief, Experience and Ability sub-scales of the Anomalous Experiences Inventory. This is the first time that such an effect has been shown using the crashing memories paradigm.

These results are consistent with the idea that at least some reports of ostensibly paranormal experiences may be based upon false memories (French, 2003). However, it should be noted that the only significant predictor of susceptibility to false memories in the current experiment was, on the basis on multiple regression, Belief rather than Experience as one might have predicted. This is an intriguing result and one that awaits replication. Paranormal belief has been shown to correlate with a number of cognitive biases (French & Wilson, in press) and it may be that both scoring highly on measures of paranormal belief and susceptibility to false memories are correlated with a third, as yet unidentified, variable which explains the link between them. One intriguing possibility is that this third factor may be a bias towards acquiescence (Blagrove, French, & Jones, 2006; Eisen, Morgan, & Mickes, 2002). This possibility will be examined in a planned future study.

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