

## Reports of Real and False Memories: The Relevance of Hypnosis, Hypnotizability, and Context of Memory Test

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Thirty high- and 30 low-hypnotizable subjects saw slides of a purse snatching and then imagined seeing the slides in hypnosis or waking conditions. The experimenter suggested the offender had a moustache (true), wore a scarf (false), and picked up flowers (false). Memory was tested by the experimenter after the suggestion, by another experimenter during an inquiry session, and again by the 2nd experimenter after the experimenter appeared to end the session. Hypnotizability, but not hypnosis, was associated with false memory reports; more high- than low-hypnotizable subjects reported false memories. The context of testing influenced true and false memory reports; fewer reports occurred in an informal rather than a formal test context.

Historical and anecdotal accounts of hypnotic suggestion have highlighted the apparent ease with which memory can be changed and the apparent strength of conviction that a person holds in a hypnotically created false memory. Hypnotic pseudomemory is said to occur when a hypnotized person accepts a suggestion for information that is false and subsequently reports that false information as memory after being awakened from hypnosis. The empirical investigations conducted to date on the hypnotic creation of false memory have pointed to a need to understand the specific relevance of the induction of hypnosis, the hypnotizability of subjects, and the context of the memory test.

Most studies of hypnotically created memory have focused on the responses of subjects in conditions that involved hypnosis, but not nonhypnosis (waking), procedures (see Labelle, Laurence, Nadon, & Perry, 1990; Laurence & Perry, 1983; Lynn, Milano, & Weekes, 1991; McCann & Sheehan, 1988; Spanos & McLean, 1986). These studies have not allowed any strong inferences to be drawn about the relevance of the induction of hypnosis to the creation of false memories (McConkey & Kinoshita, 1986). The studies that have tested subjects in hypnosis and nonhypnosis conditions have yielded conflicting findings. Lynn, Weekes, and Milano (1989) found in an application of the real-simulating paradigm that the pseudomemory reporting of real, hypnosis subjects and simulating, nonhypnosis subjects was similar. Spanos, Gwynn, Comer, Baltruweit, and de Groh (1989) showed high- and low-hypnotizable subjects a videotape of a simulated armed robbery, and 1 week later showed them a simulated newscast of a suspect's arrest; after another 1 week the subjects were questioned about the offender in either hypnosis or nonhypnosis conditions. A similar number of subjects in the hypnosis and nonhypnosis conditions misattributed

characteristics from the suspect to the offender. McConkey, Labelle, Bibb, and Bryant (1990) suggested a false memory to high- and low-hypnotizable subjects in either hypnosis or waking conditions. They reported that a similar number of hypnosis and waking subjects reported the false memory on the standard tests of pseudomemory reporting. In contrast, Sheehan and his associates (Sheehan, Statham, & Jamieson, 1991a, 1991b; Sheehan, Statham, Jamieson, & Ferguson, 1991) have reported various studies in which they suggested pseudomemories to high-, moderately, and low-hypnotizable subjects in hypnosis and waking conditions. They observed that more hypnosis than waking subjects reported the false memories on memory tests administered 2 weeks after (Sheehan et al., 1991b) and shortly after (Sheehan et al., 1991a) the pseudomemories had been suggested. Moreover, they observed that high-hypnotizable subjects in the hypnosis condition were most likely to report false memories (Sheehan et al., 1991a; Sheehan et al., 1991). Because of the arguments that can be made at a theoretical level about the possible impact of hypnosis on the creation of false memories (see Laurence & Perry, 1988; Orne, Whitehouse, Dinges, & Orne, 1988) and the conflict that exists in the findings of recent studies (e.g., McConkey et al., 1990; Sheehan et al., 1991a, 1991b), we investigate the pseudomemory reporting of subjects in hypnosis and waking conditions.

If the induction of hypnosis has an appreciable influence on pseudomemory reporting, then one will expect this influence to be seen most obviously in high- rather than low-hypnotizable subjects. Given this, some studies of hypnotic pseudomemory have focused solely on high-hypnotizable subjects (e.g., Laurence & Perry, 1983; McCann & Sheehan, 1988; Spanos & McLean, 1986), and others have been concerned with the demand characteristics that may shape the behavior of high-hypnotizable subjects (Lynn et al., 1989). The studies that have gone beyond this and tested all high-, moderately, and low-hypnotizable subjects have yielded consistent findings. Labelle et al. (1990) suggested a false memory to high-, moderately, and low-hypnotizable subjects in a hypnosis condition and found that high- and moderately but not low-hypnotizable subjects reported the suggested pseudomemory. Spanos et al. (1989)

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This research was supported in part by a grant from the Australian Research Council to Kevin M. McConkey. We are grateful to Natalie Watson and Sandra Hejtmanek for assistance with the research.

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found that across hypnosis and nonhypnosis conditions, high-hypnotizable subjects misattributed characteristics of a suspect to the offender more often than did low-hypnotizable subjects during interrogation. McConkey et al. (1990) observed that more high- than low-hypnotizable subjects in both hypnosis and waking conditions accepted the suggestion for a false memory and that they reported the false memory when tested by an independent experimenter. Sheehan et al. (1991a, 1991b) and Sheehan et al. (1991) found that more high- than moderately or low-hypnotizable subjects reported suggested pseudomemories in both hypnosis and waking conditions. Moreover, pseudomemory reports were most obvious among high-hypnotizable subjects in the hypnosis condition (Sheehan et al., 1991a; Sheehan et al., 1991). Given that hypnotizability is relevant to the reporting of false memories whether or not the induction of hypnosis is involved, we investigate pseudomemory reporting by high- and low-hypnotizable subjects.

Most recent studies of pseudomemory reporting have focused in part on the relevance of contextual influences. The impact of contextual cues is especially important to understand because Lynn et al. (1989) indicated that in the real-simulating paradigm, an explanation of pseudomemory reporting based on the demand characteristics of the procedures cannot be ruled out (Lynn et al., 1989). Spanos and McLean (1986) also showed that pseudomemory reporting was influenced by the communication features of the test setting and concluded that hypnotic pseudomemory reflected a bias in subjects' reporting rather than a distortion in their memory. Spanos et al. (1989) found that when subjects were cross-examined in an attempt to break down memory reports that misattributed characteristics of a suspect to the offender, a similar number of subjects who had given those reports in hypnosis or nonhypnosis conditions rejected them. That is, hypnosis did not immunize subjects against the effects of cross-examination in a different context of memory testing. In various studies McCann and Sheehan (1988) and Sheehan et al. (1991) have shown that pseudomemory reports were influenced by the similarity of the contexts in which the suggestion was given and in which the memory was tested, by the verifiability of the suggested false memories, and by the salience of the suggested false memories. McConkey et al. (1990) tested subjects' pseudomemory reports one time when they were with one experimenter, twice when they were with a second experimenter, and one time again when they were contacted away from the laboratory by a third experimenter. Although pseudomemory reporting did not differ across the tests in the laboratory setting, it declined appreciably when subjects were contacted away from the laboratory by the third experimenter. At a theoretical level this finding underscored the importance of the perceived link between the suggestion and the memory test in determining the occurrence of pseudomemory reporting (McConkey et al., 1990; Sheehan et al., 1991a; Sheehan et al., 1991).

Given the theoretical importance of the link between the context in which the suggestion for a false memory is given and the context in which memory is tested, we investigate pseudomemory reporting in different contexts of memory testing. The specific contexts were when the first experimenter gave subjects the suggestion during the experimental session (Test 1), when the second experimenter inquired into subjects' memory

after they had left the experimental session (Test 2), and when the second experimenter inquired into subjects' memory after giving the impression that the inquiry session was over and telling subjects that the items of interest may or may not have been in the series of slides they saw at the beginning of the experimental session.

Studies of hypnotic pseudomemory have moved from suggesting to subjects one false memory (Labelle et al., 1990; Laurence & Perry, 1983; Lynn et al., 1989; McConkey et al., 1990; Spanos & McLean, 1986) to suggesting more than one false memory (Lynn et al., 1991; McCann & Sheehan, 1988; Sheehan et al., 1991a, 1991b; Sheehan et al., 1991; Spanos et al., 1989). In various studies, McCann and Sheehan (1988), Sheehan et al. (1991a, 1991b), and Sheehan et al. (1991) have shown subjects a videotape of a simulated bank robbery and gave subjects false suggestions about the robber swearing, wearing a mask, and entering from a particular direction. They found that pseudomemory reporting was associated differentially with the three false suggestions. Spanos et al. (1989) focused on eight differing characteristics of a suspect and an offender, and they found that most subjects misattributed some or all the characteristics of the suspect to the offender. Lynn et al. (1991) gave subtle suggestions about an event that did occur (pencils dropping) as well as an event that did not occur (a telephone ringing) during a previous session, and they found that subjects were incorrect or unsure of the event that did occur as often as they were of the event that did not occur. That is, faulty memory was observed for both a suggested real event and a suggested false event. Given the variability that has been seen in the reporting of different false events (e.g., McCann & Sheehan, 1988; Sheehan et al., 1991a, 1991b; Sheehan et al., 1991), we investigate pseudomemory for two false events. Given the similarity in the reporting that has been seen across real and false events (Lynn et al., 1991), we also investigate memory for one real event.

In summary, we use hypnosis and waking conditions in order to test high- and low-hypnotizable subjects. The subjects were shown a series of slides that depicted a purse snatching (see McConkey et al., 1990) and then were treated according to their allocation to either the hypnosis or the waking condition. When the subjects were asked to reexperience seeing the slide series, the experimenter subtly suggested to them that the offender had a moustache (he did), was wearing a scarf (he was not), and helped pick up flowers (he did not). Subjects' memory reports were tested first by the experimenter immediately after the suggestion was given. Their memory reports were tested next by an independent second experimenter during an inquiry session that used the Experiential Analysis Technique (EAT; Sheehan & McConkey, 1982). Toward the end of the EAT session, subjects' memory reports were tested again by the inquirer after she had given the appearance of ending the session and had given subjects a reason for either maintaining or changing their previous memory reports.

## Method

### *Subjects*

Thirty (7 male and 23 female) high-hypnotizable subjects of a mean age of 19.17 years ( $SD = 3.20$ ) and 30 (14 male and 16 female) low-hyp-

notizable subjects of a mean age of 23.73 years ( $SD = 7.60$ ), who were undergraduate psychology students at Macquarie University, Sydney, New South Wales, Australia, participated in the experiment in return for research credit. Subjects were preselected on their extreme scores on both the 12-item Harvard Group Scale of Hypnotic Susceptibility, Form A (HGSHS:A; Shor & Orne, 1962) and a 10-item version of the Stanford Hypnotic Susceptibility Scale, Form C (SHSS:C; Weitzenhoffer & Hilgard, 1962). High-hypnotizable subjects had scored 10–12 on the HGSHS:A ( $M = 10.97$ ,  $SD = 0.67$ ) and 8–10 on the SHSS:C ( $M = 8.93$ ,  $SD = 0.87$ ). Low-hypnotizable subjects had scored 0–3 on the HGSHS:A ( $M = 1.87$ ,  $SD = 1.01$ ) and 0–3 on the SHSS:C ( $M = 1.87$ ,  $SD = 1.20$ ).

### Materials

The stimuli were those used by McConkey et al. (1990). They were twenty-three 35-mm slides projected automatically at the rate of 1 every 5 s by a Kodak carousel projector onto a  $60 \times 105$  cm projection field that was approximately 2 m in front of the subject who was seated in a comfortable high-backed chair. The slides initially depict a woman walking along a snow-covered street: She carries groceries, looks into a shop window, meets and talks with another woman with a dog, crosses at an intersection. She is bumped by the male offender and drops her grocery bag, out of which fall oranges and cans. The slides then depict the offender helping the woman to repack the grocery bag: The offender removes a red wallet from the woman's handbag and places it inside his jacket, and both stand and part amiably. The slides finally depict the woman as she walks to her car, looks into her handbag, and discovers that her wallet is missing; she then attracts the attention of a female passerby. The critical slides were those that included the offender. The offender has a dark, bushy moustache, but he is not wearing a scarf. The offender does not help the woman pick up flowers when they repack the grocery bag; there are no flowers.

### Procedure

The experiment involved two independent experimenters in either the experimental or the inquiry session.

### Experimental Session

Initially, the first experimenter (the hypnotist) asked subjects to watch carefully a series of slides that depicted a "common street offense involving an offender, a victim, and other passersby" and projected the 23 slides automatically at the rate of 1 every 5 s. The experimenter then asked subjects to tell her what they remembered about the slides; their responses were audiorecorded.

Thereafter the experimenter treated subjects according to their allocation to either the hypnosis or the control condition. Subjects in the hypnosis condition were administered a 15-min standardized hypnotic induction (adapted from Weitzenhoffer & Hilgard, 1962). Subjects in the control condition were given a puzzle task and asked to work on it for 15 min (procedure adapted from Nogrady, McConkey, & Perry, 1985). After the subjects' hypnotic induction or puzzle task, the experimenter started videorecording the session. She then gave all subjects a suggestion of hand lowering; in the control condition the suggestion was presented without any reference to hypnosis.

The experimenter then told subjects to return to the beginning of the session when they were carefully watching the interesting slides and told them they would start seeing the slides again in their mind's eye. The experimenter asked subjects to tell her what they saw as the slides flashed up in their mind's eye. Then the experimenter asked subjects to look more closely at the slides of the man and to describe the offender. After the subjects had given a description, the experimenter presented

in turn three suggestions in one of three orders.<sup>1</sup> For the moustache suggestion the experimenter told subjects, "Look more closely at the slides of the man. Think about his face. Tell me about his moustache." If subjects reported a moustache, they were asked to describe it. If subjects did not report a moustache, they were instructed, "Think about his moustache." The experimenter then said "Now can you tell me more about it?" For the scarf suggestion the experimenter told subjects, "Tell me more about what he's wearing. Tell me about the scarf that he's wearing." If subjects reported a scarf, they were asked to describe it. If subjects did not report a scarf, they were instructed, "Think about his jacket. Tell me about his jacket." After this, the experimenter told subjects, "Think about the scarf that he's wearing. Is he wearing his scarf inside or outside his jacket?" If subjects now reported a scarf, they were asked to describe it. For the flowers suggestion the experimenter asked subjects, "Tell me more about what the man helps the woman pick up. Tell me about the bunch of flowers." If subjects reported the flowers, they were asked to describe them. If subjects did not report the flowers, they were instructed, "Look at the other things he's helping the woman pick up. Think about the flowers. Now can you tell me a little bit about them." If subjects now reported the flowers, they were asked to describe them. This was Test 1 of memory.

Next, the experimenter gave suggestions for hands moving apart, negative visual hallucination, and temperature distortion; again, in the control condition the suggestions were presented without any reference to hypnosis. The subjects in the hypnosis condition were administered a standardized deinduction procedure (adapted from Weitzenhoffer & Hilgard, 1962). Finally, the experimenter told subjects that she would take them to a second experimenter who would discuss their experiences with them.

### Inquiry Session

Initially, in an application of the EAT, the second experimenter (the inquirer, who was not aware of subjects' level of hypnotizability) told the subjects she would show them the videotape of the experimental session they had just completed, stop the videotape at various points, and ask them about their experiences. The inquirer videorecorded the entire EAT session.

As the subjects watched the playback of their responses to the three suggestions, the inquirer probed the nature of their phenomenal experiences during the experimental session. For instance, she asked such questions as: "Can you explain to me how you went about conjuring up that scene?", "Tell me a bit about how easy or how difficult you found that task," and "What were you thinking about when [the experimenter] mentioned the [moustache, scarf, or flowers]?" After this general probing for each of the three items, the inquirer also asked subjects, "Tell me about how you remember it now." This was Test 2 of memory.

For the three items the inquirer asked subjects to rate how sure they were their report to her at this point was correct. Subjects who reported that an item was present in the slides were asked to rate the degree to which they were sure that the offender actually did have a moustache or was wearing a scarf or that the flowers were actually there (1 = *not at all sure* or 6 = *extremely sure*). Subjects who reported that an item was not present in the slides were asked to rate the degree to which they were sure that the offender did not have a moustache or was not wear-

<sup>1</sup> In Order A, the experimenter suggested the moustache, the scarf, and the flowers; in Order B, she suggested the scarf, the flowers, and the moustache; and in Order C, she presented the flowers, the moustache, and the scarf. Analyses indicated that the order of suggestions did not influence the pattern of findings on any dependent variable.

ing a scarf or that there were no flowers (1 = *not at all sure* or 6 = *extremely sure*).

After a brief discussion of the subjects' experiences of the other suggestions, the inquirer gave the appearance of ending the EAT session by turning off the playback of the experimental session (but she did not terminate the videorecording). She then asked subjects to complete the Tellegen Absorption Scale (TAS; Tellegen & Atkinson, 1974) and the Preference for Imagic Cognitive Style (PICS; Isaacs, 1982) questionnaires.<sup>2</sup> Afterward, the inquirer adopted a casual, informal manner and said:

Now that we've finished, I can tell you a little bit about the experiment. We are showing a number of different sets of slides to people to see what they remember. In terms of the things we discussed earlier—whether the guy had a moustache, was wearing a scarf, and helped the woman pick up flowers—well actually, some slides have them, and others don't have them. Given that this is what we're doing, what's your comment about those things, what do you think now?

This was Test 3 of memory. The inquirer then thanked the subjects for their participation and ended the session.

## Results

Table 1 presents the number of subjects who reported the items on the memory tests. A positive score was given only if a subject stated explicitly that an item was present in the slide series. A negative score was given if a subject was either equivocal or stated explicitly that an item was not present in the slide series. The data in Table 1 are based on the scoring of subjects' reports by the hypnotist (Test 1) and the inquirer (Tests 2 and 3). The scoring of subjects' reports by an independent rater indicated 99%, 89%, and 94% agreement with the hypnotist on Test 1 (for the moustache, scarf, and flowers suggestions, respectively), 94%, 75%, and 87% agreement with the inquirer on Test 2 (for the three suggestions, respectively), and 100% agreement with the inquirer on Test 3 (for all suggestions).

Separate chi-square analyses of the number of subjects who did or did not report the moustache indicated that more hypnosis than control subjects reported the moustache at Test 3,  $\chi^2(1, N = 60) = 5.93, p < .05$ . Analyses of the number of subjects who did or did not report the scarf indicated that more high- than low-hypnotizable subjects reported the scarf at Test 1,  $\chi^2(1, N = 60) = 13.61, p < .005$ , and at Test 2,  $\chi^2(1, N = 60) = 7.94, p < .005$ . Similarly, analyses of the number of subjects who did or did not report the flowers indicated that more high- than low-hypnotizable subjects reported the flowers at Test 1,  $\chi^2(1, N = 60) = 7.68, p < .01$ , and at Test 2,  $\chi^2(1, N = 60) = 5.19, p < .05$ . Thus, the condition in which subjects were given the suggestions was relevant on only one item (moustache suggestion) and on only one test (Test 3). Otherwise, subjects in the hypnosis and control conditions displayed a similar incidence of memory reporting. The hypnotizability of subjects was relevant on two items (scarf and flowers suggestions) on two tests (Test 1 and Test 2). Thus, hypnotizability was relevant to the items that were not present in the slides when memory reporting was assessed in the experimental setting and in the standard way in the inquiry setting. Hypnotizability was not relevant to the item (moustache suggestion) that was present in the slides and was not relevant when memory was assessed after the shift in the test context in the inquiry setting (Test 3).

Table 1  
*Number of Subjects Who Reported the Items*

| Condition and hypnotizability | Test 1 |    |   | Test 2 |   |   | Test 3 |   |   |
|-------------------------------|--------|----|---|--------|---|---|--------|---|---|
|                               | M      | S  | F | M      | S | F | M      | S | F |
| Hypnosis                      |        |    |   |        |   |   |        |   |   |
| High                          | 14     | 9  | 5 | 14     | 7 | 4 | 12     | 2 | 1 |
| Low                           | 14     | 3  | 1 | 14     | 4 | 1 | 12     | 0 | 0 |
| Control                       |        |    |   |        |   |   |        |   |   |
| High                          | 15     | 10 | 4 | 11     | 7 | 3 | 8      | 1 | 0 |
| Low                           | 11     | 2  | 0 | 11     | 0 | 0 | 7      | 0 | 0 |

Note. M = moustache suggestion, S = scarf suggestion, and F = flowers suggestion. In each cell,  $n = 15$ .

Table 2 presents the percentage of change in the number of subjects who reported the items across the memory tests. For each item, separate McNemar tests or binomial tests for the significance of changes ( $p < .05$ ) were conducted across the memory tests for high- and low-hypnotizable subjects because they displayed different patterns of memory reports. For high-hypnotizable subjects, analyses indicated a significant change in memory reporting from Test 1 to Test 2 for the scarf (5 subjects changed from reporting to not reporting the scarf) and significant changes from Test 2 to Test 3 for each of the items (5, 11, and 6 subjects changed from reporting to not reporting the moustache, scarf, and flowers, respectively). For low-hypnotizable subjects, analyses indicated a significant change in memory reporting for the moustache from Test 2 to Test 3 (6 subjects changed from reporting to not reporting the moustache). Thus, the most dramatic change occurred after the inquirer shifted the context of testing. When (falsely) told that the items may or may not have been present in the slides, high-hypnotizable subjects moved from reporting to not reporting each of the items, and low-hypnotizable subjects moved from reporting to not reporting the moustache. Therefore, the shift in the test context not only influenced whether high-hypnotizable subjects reported the items that were not present in the slide series (scarf and flowers) but also influenced whether high- and low-hypnotizable subjects reported the item that was present in the slide series (moustache). For the scarf a change also occurred when high-hypnotizable subjects moved from the experimental setting to the inquiry setting and memory was tested in the standard way.

## Confidence in Pseudomemory Reporting

When testing memory in the standard way, the inquirer asked subjects to rate the degree to which they were sure their report was correct. A three-way Condition  $\times$  Hypnotizability  $\times$  Memory Report analysis of variance of these data for the

<sup>2</sup> Subjects' scores on the Tellegen Absorption Scale and the Preference for Imagic Cognitive Style questionnaire were not associated reliably with their memory reports and are not discussed in this article. For a discussion of the possible relevance of these variables to hypnotic pseudomemory, see Labelle, Laurence, Nadon, and Perry (1990) and McConkey, Labelle, Bibb, and Bryant (1990).

Table 2  
*Percentage of Change in the Number of Subjects  
 Who Reported the Items*

| Condition and<br>hypnotizability | Test 1-Test 2 |       |      | Test 2-Test 3 |       |       |
|----------------------------------|---------------|-------|------|---------------|-------|-------|
|                                  | M             | S     | F    | M             | S     | F     |
| Hypnosis                         |               |       |      |               |       |       |
| High                             | 0.00          | 13.33 | 6.67 | 13.33         | 33.33 | 20.00 |
| Low                              | 0.00          | 6.67  | 0.00 | 13.33         | 26.67 | 6.67  |
| Control                          |               |       |      |               |       |       |
| High                             | 26.67         | 20.00 | 6.67 | 20.00         | 40.00 | 20.00 |
| Low                              | 0.00          | 13.33 | 0.00 | 26.67         | 0.00  | 0.00  |

Note. M = moustache suggestion, S = scarf suggestion, and F = flowers suggestion.

moustache suggestion yielded a significant main effect of memory report,  $F(1, 52) = 8.70, p < .005$ . Subjects who reported that the moustache was present ( $M = 4.98$ ) were more confident of their response than were those who reported that the moustache was absent ( $M = 3.50$ ). A similar analysis for the scarf yielded no significant main or interaction effects. A similar analysis for the flowers yielded a significant main effect of memory report,  $F(1, 53) = 9.32, p < .005$ . Subjects who reported that the flowers were absent ( $M = 4.33$ ) were more confident of their response than were those who reported that the flowers were present ( $M = 2.38$ ). Therefore, neither condition nor hypnotizability was relevant to subjects' confidence in their reports when assessed in the standard way during the EAT session.

### *Subjects' Comments During the Experiential Analysis Technique*

Besides obtaining memory reports, we explored in the EAT session subjects' experiences in a more heuristic fashion. Subjects' general comments were categorized according to whether their pseudomemory reports appeared to be based on a belief the subject held about the presence or absence of the item in the slides, a confusion the subject displayed in whether the item was present or not, or a compliance of the subject to the perceived expectations of the experimenter to report the item as present in the slides. Qualitative material presented here focuses on those subjects who changed their reports across the memory tests.

When the inquirer asked subjects about the scarf in the standard way, 5 high-hypnotizable subjects changed from reporting (on Test 1) to not reporting the scarf (on Test 2). Their comments indicated that 3 subjects displayed initial confusion about the presence of the scarf when asked about it by the experimenter (on Test 1). For example, one remarked, "I couldn't really remember a scarf when [the experimenter] asked me, but I assumed that because he was wearing a duffle coat, the scarf was dark." The other two commented in a way that essentially indicated behavioral compliance. For instance, one said, "I knew he didn't have a scarf. I felt pressured, so I put a scarf on him to give an answer."

The greatest change occurred after the inquirer shifted the

context of testing (on Test 3). When she (falsely) told subjects that the moustache, scarf, and flowers may or may not have been present in the slides, an appreciable number of high-hypnotizable subjects moved from reporting (on Test 2) to not reporting each of the items (on Test 3), and an appreciable number of low-hypnotizable subjects moved from reporting to not reporting the moustache. Of the 11 high- and low-hypnotizable subjects who changed from reporting to not reporting the moustache, 9 displayed some confusion when they commented on the moustache even though they had reported it to the experimenter. For instance, one said, "My memory was not at all clear. I didn't know if he had [a moustache] or not," and another reflected, "He probably didn't have a moustache at all. I'm doubting whether I saw it." Of the 11 high-hypnotizable subjects who changed from reporting to not reporting the scarf, 9 displayed initial confusion in their thinking about the scarf in contrast to their verbal report to the experimenter that the scarf had been present. For example, one said, "I found it hard to remember about his scarf. Maybe I just pictured the guy with a scarf," and another remarked, "If it was there, I remember it being black or navy blue. I don't know, I don't know what it's like." Of the 7 high-hypnotizable subjects who changed from reporting to not reporting the flowers, 3 displayed confusion when they discussed their reporting of the flowers in the experimental setting. One commented, "I remember the flowers, but I could have been making guesses." The other 4 indicated that they held a belief in the presence of the flowers yet still changed their reporting after the shift of context. For example, one remarked, "I vaguely remember seeing some flowers fall on the ground." These comments suggest that most subjects who changed their reporting after the shift in context were those who, despite their initial positive reports to the experimenter, experienced either confusion in their original memory of the items or responded positively to the experimenter because of the social demands of the test setting.

### Discussion

The condition (hypnosis or control) in which the subjects were tested was relevant to their memory reports for only one item on only one test. In general, subjects in the hypnosis and the control conditions did not differ in their memory reports. This is consistent with McConkey et al. (1990) but contrasts with the findings of Sheehan et al. (1991a, 1991b) and Sheehan et al. (1991) of a difference in the occurrence of false memory reports between hypnosis and control subjects. The reason a higher incidence of false memory reports has been seen in some studies and not in others, including ours, will need to be determined in future research. In such research one will need to consider also that false memory reports may be interpreted on the basis of demand characteristics, and such an interpretation has not been ruled out (Lynn et al., 1989).

Hypnotizability was the major predictor of subjects' false memory reports in this experiment. It was relevant to the two items that were not present in the slide series (scarf and flowers) when memory was tested in the experimental setting and in the standard way in the inquiry setting. This is consistent with the findings of McConkey et al. (1990), Labelle et al. (1990), Sheehan et al. (1991a, 1991b), and Sheehan et al. (1991) that hypnоти-

zability is relevant to the reporting of false memories whether or not the induction of hypnosis is involved. High-hypnotizable subjects are more likely to accept a pseudomemory suggestion and to maintain their reports of false memory under standard conditions of memory test. One possibility that needs to be explored in future research is that this occurs because high- more so than low-hypnotizable subjects accept the pseudomemory suggestion and cognitively elaborate that suggestion in a way that gives it a greater degree of personal meaningfulness. On this basis, one may predict that high- and low-hypnotizable subjects ought to differ in the degree to which they display an unsuggested elaboration of suggested pseudomemories.

We explored whether different patterns of memory reports would occur when different types of items were used. In a conceptually similar way to Lynn et al.'s (1991) study, one item (moustache) was present in the slide series and was a suggested real item. High- and low-hypnotizable subjects both showed a drop-off in their reports of the moustache after the inquirer's shift in the context of testing. This extends the finding of McConkey et al. (1990) and is consistent with the observation of Lynn et al. (1991) that faulty memory can occur for both a suggested real event and a suggested false event. In our experiment, subjects' reports of both false memories (scarf and flowers) and actual memories (moustache) were influenced by the context of the memory test. Thus, one can argue that subjects' reports of the false items were no more or less fixed in memory than were those associated with the real item.

We tested subjects' memory reports once during hypnosis and twice in different social contexts after hypnosis. When the inquirer shifted to an informal approach and told subjects that the items may or may not have been present in the slides, most subjects who had initially reported the items to the inquirer changed their reports. The meaning of this finding needs to be interpreted with care, however. The shift in context required that the inquirer not only adopt a casual manner and give the impression that the experiment was over but also (falsely) tell subjects that the items may or may not have been present in the slides. In future research it needs to be determined whether subjects altered their reports because of the change in the inquirer's manner or as a result of the new information that she gave them. The important point, however, is that the shift in context resulted in a substantial drop-off in subjects' reporting of the items, particularly for high-hypnotizable subjects. This is consistent with the theoretical emphasis that McConkey et al. (1990), Sheehan et al. (1991a), and Sheehan et al. (1991) placed on the link between the suggestion for a false event and the context of the memory test.

Subjects' general comments during the EAT session indicated that those subjects who changed their report of an item displayed either confusion in their thinking or behavioral compliance. It must be acknowledged that some subjects may have commented about their confusion because they saw it as more acceptable than commenting on their compliance, and these general comments of subjects need to be interpreted with caution (see Sheehan & McConkey, 1982). Nevertheless, related to this report of confusion is an issue that needs to be addressed in future research: What is the exact criterion that ought to be used to index pseudomemory reporting in the experimental hypnosis setting (see also Lynn et al., 1991)? Laurence and Perry

(1983) and Labelle et al. (1990) regarded any uncertainty on the subject's part in saying that the item was definitely absent as an indication of the presence of a pseudomemory. One can argue, however, that confusion or uncertainty ought to be seen as the absence of a pseudomemory. The qualitative data support this notion. Subjects who changed from reporting to not reporting the items typically displayed confusion in their original memories. Such subjects can hardly be said to have experienced a major change in memory, and to count them as exhibiting the suggested creation of false memories may be a possible inflation of pseudomemory reporting. That is, confusion or uncertainty does not wholly indicate the acceptance of a pseudomemory suggestion.

In this experiment we show that hypnotizability is the most important factor in the acceptance of a false memory suggestion. However, the context of testing has a major influence on subjects' memory reports of both suggested real and suggested false events. When the context of the memory test is shifted from a formal to an informal one and the link between the suggestion and the memory test is weakened, a decrease in memory reports is seen. Although this suggests that social psychological factors are critically at work in pseudomemory suggestion and reporting, it is important to keep in mind that the hypnotizability of the subject has a considerable influence on whether a suggested memory item is reported. High-hypnotizable subjects are much more likely to respond to a pseudomemory suggestion. Whether their responses reflect an actual change in memory or a change in their reports of memory needs to be investigated more closely, especially in light of the finding that they may alter their responses under different contexts of memory testing.

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Received January 30, 1991

Revision received August 19, 1991

Accepted October 25, 1991 ■

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