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Inventing stories: Forcing witnesses to fabricate entire fictitious events leads to freely reported false memories

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Studies of the forced fabrication effect have shown that participant witnesses are prone to developing false memories for specific items or details that they have been forced to fabricate earlier (e.g., what type of hat someone wore). Building on these earlier findings, the present study assessed whether participants would develop false memories if forced to fabricate entire fictitious events that were more complex and extended in time and involved people, locations, and actions that they had never seen. Participants vehemently resisted fabricating these events, and false memory development over the short term (1-week recognition test) was limited. However, after 8 weeks, participants freely reported their forced fabrications nearly 50% of the time and did so even when they had correctly and publicly rejected them earlier on the 1-week recognition test. This is the first evidence that participant witnesses will freely incorporate into their eyewitness accounts entire fictitious events that they have earlier been forced to fabricate.

In forensic interview situations, witnesses are sometimes pressed to provide answers to questions about witnessed or experienced events, even if they have no memory of the requested information. In such cases, witnesses may fabricate, or make up, a response. Although this kind of speculation may occur unwittingly, as in the case of spontaneous inference (Gerrie, Belcher, & Garry, 2006), the present study was concerned with situations in which witnesses are forced to fabricate accounts of fictitious events that they would not produce had they not been forced to do so. Might witnesses eventually develop false memories for events that they have knowingly fabricated under duress?

Laboratory studies of the forced fabrication effect (Ackil & Zaragoza, 1998; Hanba & Zaragoza, 2007; Zaragoza, Payment, Ackil, Drivdahl, & Beck, 2001) have suggested that they sometimes do. In the forced fabrication paradigm, participants do not provide erroneous testimony freely but, rather, are coerced into providing testimony about events that they have never actually witnessed. For example, in Zaragoza et al., participants viewed an eyewitness event and then engaged in face-to-face interviews. In addition to answering questions about true events that actually did occur, they were also pressed to answer questions about blatantly false events that had never occurred in the eyewitness event (e.g., they were asked to describe where the protagonist was bleeding when, in fact, he never bled). Participants resisted answering the false event questions but eventually acquiesced to the experimenter's repeated instruction to provide a response to every question. One week later, participants' memory for the video was assessed with a recognition test that included their fabricated responses. Although participants were warned that they had been interviewed about some fictitious events, they nevertheless claimed to remember witnessing details that they had earlier been forced to fabricate.

Why might people be prone to confusing events that they have fabricated knowingly with actually perceived events? Research and theory on source monitoring has shown that source confusions arise when information retrieved from memory about an item's source is ambiguous or incomplete, and/or when less than optimal judgment processes are used to evaluate an item's source (see Johnson, Hashtroudi, & Lindsay, 1993, for a review). For example, common causes of source confusions are situations in which a memory has characteristics that are typical of another source. Pressing witnesses to fabricate a fictitious event forces the witness to create a concrete, perceptually and semantically detailed version of the fabricated event, thus increasing its similarity to a memory of an actually perceived event. Moreover, because a self-generated fabricated event will be constructed within the constraints of a person's idiosyncratic knowledge and beliefs, it is likely to result in an account that may later be perceived as especially plausible and real.

On the other hand, suggestive interviews involving forced fabrication differ from other kinds of suggestive interviews in one critically important way. Whereas many suggestive interviews involve the provision of false information by an interviewer (e.g., the interviewer suggests

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that the culprit carried a weapon when none was present), in suggestive interviews involving forced fabrication, the interviewer elicits from witnesses false information that they would not provide were they not forced to do so. Presumably, participant witnesses who know that the event is something that they made up earlier would not claim to remember witnessing it. This knowledge may limit false memory development, regardless of how vivid or compelling the representation of the fabricated event might be. Hence, we assume that one precondition for false memory development in the forced fabrication paradigm is that participants fail to remember that they fabricated an event earlier. Consistent with this claim, Zaragoza et al. (2001) showed that overt resistance to answering the false event questions (e.g., claims of "I didn't see that") was associated with resistance to false memory development. Presumably, publicly resisting the demand to fabricate an event improved participants' memory of having fabricated the response.

The present study assessed whether participants would be prone to developing false memories if forced to fabricate an entire fictitious event. In related studies conducted to date, participants have been forced to fabricate individual items or details (e.g., where a man was bleeding, what kind of hat he was wearing); that is, they have been forced to fabricate only one- or two-word responses. However, the purpose of many forensic investigations is to elicit testimony that is much broader in scope (e.g., to describe the events that caused a traffic accident).

Given that participants strongly resist providing even one-word fabricated responses, it is reasonable to predict that forcing participants to fabricate events that are broader in scope will result in even greater resistance and refusals to respond, thus inhibiting false memory development. On the other hand, having to fabricate an entire event may engage more extensive meaningful and elaborative processing. Thus, the strong familiarity and semantic richness of an entire fabricated event may render it confusable for a witnessed memory, especially in circumstances under which participants' memory of having fabricated the event is weak. Accordingly, it is of both theoretical and practical importance to know whether forcing participants to fabricate fictitious events that are more complex and extended in time might similarly lead to false eyewitness memories.

METHOD

Participants, Materials, and Procedure

A total of 178 undergraduates completed the experiment in fulfillment of a course requirement. Participants came to the lab in pairs, with one member of each pair assigned to the forced fabrication (FF) group and the other member assigned to the control group. Approximately 60% of the participants in each group were given a warning before the initial memory test, and the remaining participants were not, resulting in four groups: FF warned, FF unwarned, control warned, and control unwarned.

Phase 1: Eyewitness Event

All of the participants viewed an edited 18-min clip from the movie *Looking for Miracles* (Grant & Sullivan, 1989), which depicts the adventures of two brothers at summer camp. The clip is filled with action and drama, including, for example, a fight among the campers and a camp counselor being bitten by a poisonous snake.

Phase 2: Forced Fabrication Interview

Two days later, participants engaged in individual face-to-face interviews with an experimenter. All of the interviews were audiotaped. Before the interview began, all of the participants were instructed to answer interview questions in as much detail as possible, including where the event took place, who was there, and what happened. Importantly, participants were told that they must provide an answer to every question and were explicitly instructed to guess if they did not know an answer.

All of the participants were questioned about the events of the video in chronological order. Five of these questions were true event questions, which queried participants about salient scenes in the video. For participants in the FF group, there were also two false event questions, interspersed at the relevant points in the interview, for which they were asked to describe entire fictitious events that they had never witnessed.

The two false event questions are provided below. For each false event question, a description of the corresponding scene from the movie is provided beforehand for comparison. Note that although both false event questions make reference to actual scenes from the movie, none of the events that participants were asked to describe had ever happened, and as such, participants were required to fabricate a response out of whole cloth.

Prank False Event Question

Actual scene. While in the dining hall, a camp counselor named Delaney stood up to make an announcement when he inexplicably lost his balance and, arms flailing, fell to the floor, knocking platters of food off the table. Then the woman who owns the camp crouched down and reprimanded him for "playing the fool."

False event interview question. "The next scene takes place in the dining hall. Delaney is asked to stand up and make an announcement. A practical joke is pulled on him that causes him to fall and end up on the floor. What was it?" This initial prompt was followed by a series of specific questions designed to elicit a full account that included all of the following: (1) a specific prank that caused Delaney to fall, (2) who pulled the prank, and (3) how the prank was carried out.

Sneak False Event Question

Actual scene. Delaney and another counselor named Moe were seen sneaking into a canoe at night. The movie then cut to the next day, with Delaney being reprimanded harshly by the camp director, who was shocked and disappointed by his behavior. Later, the movie ended with Delaney sitting at the water's edge, looking very upset because he had lost his scholarship.

False event question. "Towards the end of the movie, Delaney and Moe use a canoe to sneak off at night. After sneaking out, where did they go and what did they do that caused them to get in so much trouble the next day?" This initial prompt was followed up with a series of more specific questions until the participant provided an account that contained specific descriptions of (1) a location where the two boys went, (2) what they did there, and (3) who else was there with them. (See Table 1 for a complete listing of the types of responses generated to these false event questions.)

Finally, in order to minimize differences between FF and control participants, control participants were forced to fabricate one plausible (but different) fictitious event that will not be described here.

Phase 3: 1-Week Recognition Test

One week after viewing the video, all of the participants were tested individually by a different experimenter. Participants in the warned groups were informed that the original interviewer had asked them about events that had never happened in the video. Participants

Table 1
Variety of Responses Fabricated for Each False Event Question During the Phase 2 Interview

False Event Response	%
Prank Event	
Someone put something on the floor for Delaney to slip on (e.g., spaghetti, oil, a banana)	35
Someone pushed/pulled something from under Delaney (e.g., a rug, a table, a bench)	20
Someone tampered with Delaney's chair (e.g., removed the nails, sawed the legs)	14
Someone threw/shot something at Delaney (e.g., peas with a slingshot)	9
Someone physically tripped/pushed Delaney (e.g., with their foot)	9
Someone tied Delaney's shoelaces together	6
Someone put something on the floor for Delaney to trip over (e.g., a tray, a stick)	5
Miscellaneous	2
Sneak Event	
Hung out/activity with the girls at the girls' camp (e.g., drank, made out, played cards)	26
Vandalized/stole from another camp/cabin (e.g., TPed the cabins, stole liquor)	21
Spied on/visited the nurse	18
Spied on/scared the girls at the girls' camp (e.g., looked in the windows, put snakes in a cabin)	15
Activity on the lake/in the woods (e.g., went fishing, built a campfire)	13
Went into town (e.g., for food)	2
Miscellaneous	5

Note—For the Prank item, the perpetrator of the practical joke varied across participants. Responses included, but were not limited to, the cook, Delaney's brother Sullivan, a bully nicknamed Ratface, and another counselor.

in the unwarned groups were simply told that they would be asked questions about their memory for the video.

All of the participants were asked 12 *yes–no* questions of the form "When you watched the video, did you see _____?" For each pair of participants (one each from the FF and control groups), the test list consisted of 12 scenes queried in chronological order and included the two fictitious events that had earlier been fabricated by the participant from the FF group during the Phase 2 interview. For the purposes of the recognition test, the description of each fabricated event was condensed into a single sentence that included the particular who, what, when, and where information that the FF participant had fabricated. Note that for control participants, their partner's forced fabrications were new, since controls were never asked the relevant false event questions during the Phase 2 interview. The remaining 10 filler items were 3 true events from the video about which the participants had not been interviewed, 4 true events about which participants had been interviewed, and 3 new false events that participants had not been interviewed about.

Because the main concern of this study was false memory for fabricated events, we report (1) FF participants' false assents to their self-generated forced fabrications and (2) control participants' false assents to their FF partner's fabrications (the measure of base rate error) only.

Phase 4: 8-Week Free Recall

Approximately 8 weeks later, 114 eligible participants were contacted and were asked to return for additional testing (some participants were tested too late in the semester to participate in delayed free recall). Seventy-five participants returned, with 18–21 participants in each of the four groups. Importantly, recognition performance of those who returned for free recall was nearly identical to that for the overall sample.

Individual participants were told to assume that they were eyewitnesses whose testimony could be used in a court of law, and they were asked to report the events that they had witnessed in the video as accurately and in as much detail as possible. Importantly, the experimenter did not provide any cues or prompts; participants were completely free to report as much or as little of the clip as they wished. Of primary interest was the extent to which participants freely reported the fabricated events.

RESULTS

Manipulation Check: Were Participants Truly Forced to Fabricate?

Participants strongly resisted answering the false event questions and frequently went to great lengths to avoid fabricating a response. (All false event interviews were transcribed and coded by two independent raters, with discrepancies resolved by discussion; for comparison, the same was done with true event interviews for a subset of 10 randomly selected participants.) In 75% of the cases, participants provided no relevant information when initially asked the false event questions. Instead, participants either bluntly refused to respond (55% of the time), with statements such as "I didn't see that" or "I don't remember," or evaded answering the question (45% of the time) by talking about other events from the video or by remaining quiet. When participants resisted, the interviewer pressed them to respond, prompting them to provide their best guess. The interviewer did so repeatedly until participants provided a relevant response to the question (i.e., described a prank or described where the counselors went). On average, it took three conversational turns before participants began fabricating information that addressed the false event question. In contrast, participants never resisted when responding to true event questions and always provided relevant information on the initial query.

Because participants were required to provide full and detailed accounts of the events (whether fabricated or witnessed), the interview did not end with the initial fabricated response, which was typically fairly vague and general (e.g., "they went to the girls' camp"). Rather, the interviewer always followed up with specific requests for more information regarding who was there, how the events unfolded, and where the events took place, until the

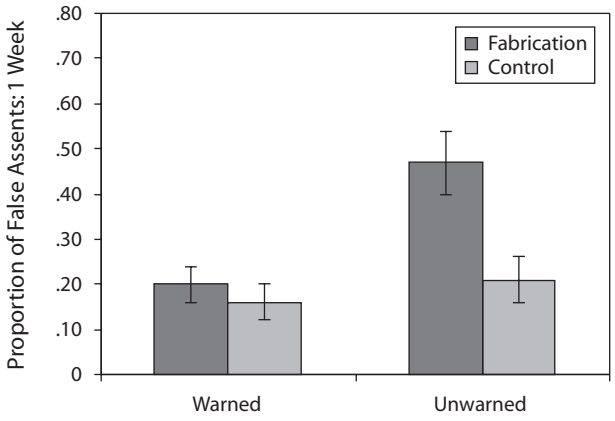

Figure 1. Proportion of forced fabrication (FF) warned and FF unwarned participants' false assents to their fabricated events on the 1-week recognition test. The base rate of false assents in the corresponding control warned and control unwarned groups is provided for comparison. Error bars represent standard errors of the mean.

participant complied. On average, it took eight conversational turns to elicit a fully detailed account of fabricated events (e.g., "Delaney and Moe went to the girls' camp, met up with two girls, and drank with them in their cabin") but only two conversational turns to elicit comparably detailed accounts of true events.

Did Participants Develop False Memories for Previously Fabricated Events?

For both dependent measures (false assents to fabricated events at 1 week and false recall of fabricated events at 8 weeks), separate 2 (group: FF vs. control) × 2 (warning: warned vs. unwarned) between-participants ANOVAs were conducted. Main effects and interactions were deemed reliable at $p < .05$. Because performance for the prank and sneak items did not differ on any of the dependent measures, results are collapsed across items.

False recognition of entire fabricated events at 1 week. As is illustrated in Figure 1, forcing participants to fabricate increased false assents, but only for unwarned participants. The main effects of fabrication [$F(1,174) = 8.47$] and warning [$F(1,174) = 9.13$] were qualified by a reliable fabrication × warning interaction [$F(1,174) = 4.880$]. Planned comparisons confirmed that false assents in the FF unwarned group exceeded the base rate of false assents in the control unwarned group [$t(90) = 7.30$]. However, false assents in the FF warned and control warned groups did not differ [$t(84) < 1$]. Because unwarned participants may have assented to their fabrications for reasons other than false memory (e.g., a perceived demand to respond consistently across sessions), collectively, the results provide inconclusive evidence of false memory for fabricated events after 1 week.

False recall of fabricated events at 8 weeks. Two blind raters coded free recall transcripts for free recall of the forcibly fabricated events (discrepancies were resolved by discussion). For each of the two fabricated events, the coder assessed whether participants reported information that they had earlier been forced to fabricate (either *yes* or *no*). Participants typically reported the gist of their fabrications (e.g., "they went to girls' camp") rather than the detailed account that they were initially required to generate. Note that free recall of false presuppositions that had been provided by the experimenter (e.g., "someone pulled a prank") was not counted, since these events were not fabricated by the participant.

Overall, FF participants freely reported their forced fabrications at a much higher rate ($M = .47$) than did control participants ($M = .14$), who had been exposed to this information only on the earlier recognition test [$F(1,71) = 21.29$]. In contrast to the 1-week recognition results, warned participants did not evidence reliably lower false recall; neither the effect of warning [$F(1,71) < 1$] nor the group × warning interaction [$F(1,71) < 1$] was reliable.

Given that FF participants had a higher number of false assents than did controls on the 1-week recognition test, it is unclear to what extent these group differences in false recall simply reflect carryover from the earlier test. Accordingly, we next assessed delayed false recall separately for (1) the fabricated events that participants had originally endorsed as *witnessed* on the 1-week recognition test and (2) the fabricated events that participants had correctly rejected as *not witnessed*. The results are illustrated in Figure 2, collapsed across warning group.

Controlling for performance on the recognition test did not alter the pattern of results: FF participants were more likely to freely recall the events that they had fabricated earlier than were control participants (who had encountered the fabricated events on the recognition test only). This was true for those fabricated events that FF and control participants had originally falsely assented to [$F(1,29) = 4.15$], as well as for those fabricated events that FF and control par-

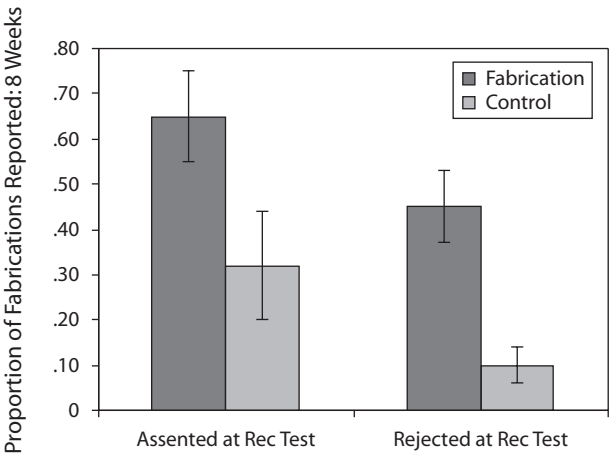

Figure 2. Proportion of forced fabrication (FF) events freely reported by FF and control participants on the 8-week recall test as a function of performance on the 1-week recognition (Rec) test. That is, free recall is reported separately for those fabricated events that participants had earlier (1) falsely assented to and (2) correctly rejected as not witnessed on the 1-week recognition test. The data for the FF and control groups are reported collapsed across warning. Error bars represent standard errors of the mean.

ticipants had initially correctly rejected as false [$F(1,62) = 16.82$]. The finding that FF participants freely reported almost half (.45) of the forced fabrications that they had correctly rejected earlier as false provides especially compelling evidence of false memory development over time. In contrast, the very low rates at which control participants freely reported these fictitious events provides strong evidence that participants rarely develop these false memories unless they have been forced to fabricate them.

DISCUSSION

Although participants vehemently resisted the request to fabricate entire fictitious events, over time, they developed false memories for these events. However, unlike in previous studies involving forced fabrication of specific items or details (Zaragoza et al., 2001), there was little evidence in the present study of false memory development on the 1-week recognition test. Participants' increased resistance to fabricating an extended fictitious event, coupled with the inherent difficulty of fabricating an entire event from scratch, likely improved participants' memory of having self-generated the event (see, e.g., Johnson & Raye, 1981). To the extent that participants can accurately remember having fabricated the event, they are unlikely to confuse it with a witnessed event.

However, when the same participants returned 8 weeks later, they freely reported their forced fabrications almost 50% of the time, even when they had correctly and publicly rejected them earlier on the 1-week test. This result is especially surprising, given the finding in studies of testing effects that correct performance on short-term recognition tests serves to preserve accurate memories and to reduce distortions on delayed free-recall tests (e.g., Roediger & Karpicke, 2006).

Why were participants who had correctly rejected their fabrications as not witnessed so likely to freely report them later on? Over time, participants' memory for having fabricated these events likely faded faster than did their memory for the content of their fabrications. Presumably, memory of the content of the fabricated events remained relatively strong as a result of the extensive elaborative processing that went into fabricating an entire event. This dissociation between the source of their fabrications and its content likely contributed to the high rate at which participants freely reported the fabricated events after an 8-week delay, a finding reminiscent of the sleeper effect (Eagly & Chaiken, 1993).

However, we suspect that at least one other factor contributed to the high rate at which participants freely recalled their forcibly fabricated events. The nature of many eyewitness testimony situations is that there is an outcome (an accident, a theft, an assault, etc.) for which the cause is not well understood. The eyewitness's role is to provide detailed evidence regarding the people and events that led to the outcome. In some of these cases, witnesses may be pushed beyond their actual memory to provide evidence about events that they have not seen or do not remember. The present study was designed to be an analogue of this real-world situation. Specifically, the fictitious events that we forced participants to fabricate helped to explain an outcome that they had witnessed in the movie. For example, participants witnessed two counselors sneaking off at night in a canoe and consequently getting into serious trouble with the camp director the following day. Fabricating an event in which the counselors went to the girls' camp to get drunk provides a richer and more complete explanation of the events that they had actually witnessed. That is, the fabricated event provides additional rationale for stealing the canoes and helps to explain the harsh reprimand and punishment that the characters actually received. Given the evidence that the parts of a story that are central to its causal structure are especially likely to be recalled (Trabasso, Secco, & van den Broek, 1984), we suspect that participants' high rates of false recall were due in part to the fabricated events' links to the overall causal structure of the witnessed event. Of course, validation of the proposal above will require additional research involving controlled experiments that manipulate the role of a given fabricated event in the overall causal structure of a witnessed event.

As such, the main contribution of the present study is that it provides the first evidence that participants can develop false memories for entire fictitious events that they have earlier been forced to fabricate knowingly. Although the events that participants were forced to fabricate were embedded in a larger series of events that they actually had witnessed, it is nevertheless the case that the information that the participants were forced to fabricate constituted an entire event (according to criteria set forth by Zacks & Tversky, 2001). That is, the fabricated information consisted of a sequence of intentional acts that were extended in time and had a clearly identifiable beginning and end. These fabricated events were distinct from the events that they had actually viewed in that they were characterized by unique but fictitious subplots (see Table 1) that involved objects and actions that they had never witnessed and implied new information about the intentions and motives of the characters involved.

A second contribution is the finding that, over time, these forcibly fabricated events eventually became an integral part of the participants' enduring memory for the witnessed event. As such, the present study underscores the dynamic nature of memory and the utility of assessing false memory development over protracted retention intervals. Finally, note that although there is a vast literature documenting the fact that suggestive interviews can lead to false eyewitness memories and even to false autobiographical memories from childhood (e.g., Loftus & Pickrell, 1995), most studies have assessed false memory development by directly probing for the false information (e.g., on tests of recognition and cued recall). Comparatively little is known about the extent to which participants freely incorporate these false memories into their testimony, as was assessed in the present study. Yet, from a practical perspective, false testimony that is freely and consistently provided by a witness is more likely to be detrimental to the administration of justice than false testimony obtained only if an interviewer happens to probe for a particular piece of information.

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