Creating False Memories

BRYAN CHRISTIE; PHOTOGRAPH COURTESY OF JOSEFA JAKLITSCH

Researchers are showing how suggestion and imagination can create "memories" of events that did not actually occur

by Elizabeth F. Loftus

In 1986 Nadean Cool, a nurse's aide in Wisconsin, sought therapy from a psychiatrist to help her cope with her reaction to a traumatic event experienced by her daughter. During therapy, the psychiatrist used hypnosis and other suggestive techniques to dig out buried memories of abuse that Cool herself had allegedly experienced. In the process, Cool became convinced that she had repressed memories of having been in a satanic cult, of eating babies, of being raped, of having sex with animals and of being forced to watch the murder of her eight-year-old friend. She came to believe that she had more than 120 personalities—children, adults, angels and even a duck—all because, Cool was told, she had experienced severe childhood sexual and physical abuse. The psychiatrist also performed exorcisms on her, one of which lasted for five hours and included the sprinkling of holy water and screams for Satan to leave Cool's body.

When Cool finally realized that false memories had been planted, she sued the psychiatrist for malpractice. In March 1997, after five weeks of trial, her case was settled out of court for $2.4 million.

Nadean Cool is not the only patient to develop false memories as a result of questionable therapy. In Missouri in 1992 a church counselor helped Beth Rutherford to remember during therapy that her father, a clergyman, had regularly raped her between the ages of seven and 14 and that her mother sometimes helped him by holding her down. Under her therapist's guidance, Rutherford developed memories of her father twice impregnating her and forcing her to abort the fetus herself with a coat hanger. The father had to resign from his post as a clergyman when the allegations were made public. Later medical examination of the daughter revealed, however, that she was still a virgin at age 22 and had never been pregnant. The daughter sued the therapist and received a $1-million settlement in 1996.

About a year earlier two juries returned verdicts against a Minnesota psychiatrist accused of planting false memories by former patients Vynnette Hamanne and Elizabeth Carlson, who under hypnosis and sodium amytal, and after being fed misinformation about the workings of memory, had come to remember horrific abuse by family members. The juries awarded Hammane $2.67 million and Carlson $2.5 million for their ordeals.

In all four cases, the women developed memories about childhood abuse in therapy and then later denied their authenticity. How can we determine if memories of childhood abuse are true or false? Without corroboration, it is very difficult to differentiate between false memories and true ones. Also, in these cases, some memories were contrary to physical evidence, such as explicit and detailed recollections of rape and abortion when medical examination confirmed virginity. How is it possible for people to acquire elaborate and confident false memories? A growing number of investigations demonstrate that under the right circumstances false memories can be instilled rather easily in some people.

My own research into memory distortion goes back to the early 1970s, when I began studies of the "misinformation effect." These studies show that when people who witness an event are later exposed to new and misleading information about it, their recollections often become distorted. In one example, participants viewed a simulated automobile accident at an intersection with a stop sign. After the viewing, half the participants received a suggestion that the traffic sign was a yield sign. When asked later what traffic sign they remembered seeing at the intersection, those who had been given the suggestion tended to claim that they had seen a yield sign. Those who had not received the phony information were much more accurate in their recollection of the traffic sign.

My students and I have now conducted more than 200 experiments involving over 20,000 individuals that document how exposure to misinformation induces memory distortion. In these studies, people "recalled" a conspicuous barn in a bucolic scene that contained no buildings at all, broken glass and tape recorders that were not in the scenes they viewed, a white instead of a blue vehicle in a crime scene, and Minnie Mouse when they actually saw Mickey Mouse. Taken together, these studies show that misinformation can change an individual's recollection in predictable and sometimes very powerful ways.

Misinformation has the potential for invading our memories when we talk to other people, when we are suggestively interrogated or when we read or view media coverage about some event that we may have experienced ourselves. After more than two decades of exploring the power of misinformation, researchers have learned a great deal about the conditions that make people susceptible to memory modification. Memories are more easily modified, for instance, when the passage of time allows the original memory to fade.

False Childhood Memories

It is one thing to change a detail or two in an otherwise intact memory but quite another to plant a false memory of an event that never happened. To study false memory, my students and I

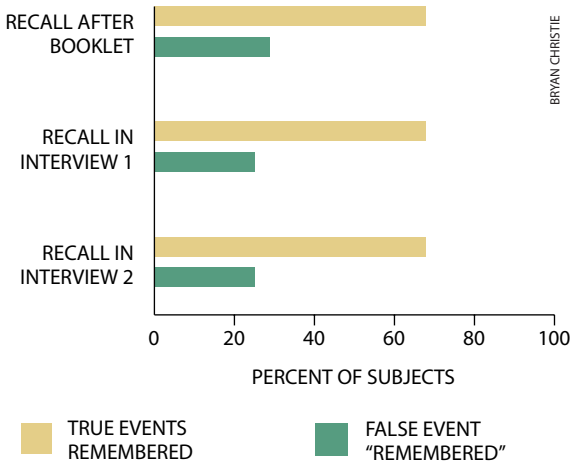
FALSE MEMORIES are often created by combining actual memories with suggestions received from others. The memory of a happy childhood outing to the beach with father and grandfather, for instance, can be distorted by a suggestion, perhaps from a relative, into a memory of being afraid or lost. False memories also can be induced when a person is encouraged to imagine experiencing specific events without worrying about whether they really happened or not.

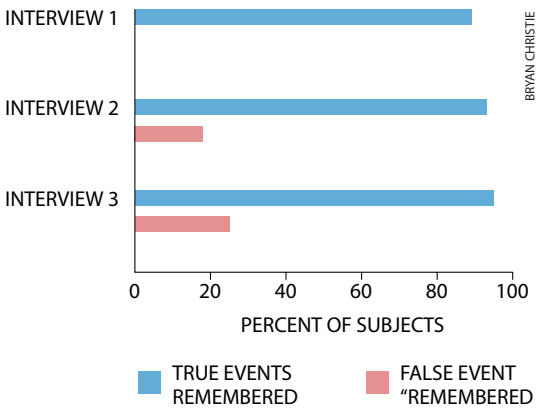
first had to find a way to plant a pseudomemory that would not cause our subjects undue emotional stress, either in the process of creating the false memory or when we revealed that they had been intentionally deceived. Yet we wanted to try to plant a memory that would be at least mildly traumatic, had the experience actually happened.

My research associate, Jacqueline E. Pickrell, and I settled on trying to plant a specific memory of being lost in a shopping mall or large department store at about the age of five. Here's how we did it. We asked our subjects, 24 individuals ranging in age from 18 to 53, to try to remember childhood events that had been recounted to us by a parent, an older sibling or another close relative. We prepared a booklet for each participant containing one-paragraph stories about three events that had actually happened to him or her and one that had not. We constructed the false event using information about a plausible shopping trip provided by a relative, who also verified that the participant had not in fact been lost at about the age of five. The lost-in-the-mall scenario included the following elements: lost for an extended period, crying, aid and comfort by an elderly woman and, finally, reunion with the family.

After reading each story in the booklet, the participants wrote what they remembered about the event. If they did not remember it, they were instructed to write, "I do not remember this." In two follow-up interviews, we told the participants that we were interested in examining how much detail they could remember and how their memories compared with those of their relative. The event paragraphs were not read to them verbatim, but rather parts were provided as retrieval cues. The participants recalled something about 49 of the 72 true events (68 percent) immediately after the initial reading of the booklet and also in each of the two follow-up interviews. After reading the booklet, seven of the 24 participants (29 percent) remembered either partially or fully the false event constructed for them, and in the two follow-up interviews six participants (25 percent) continued to claim that they remembered the fictitious event. Statistically, there were some differences between the true memories and the false ones: participants used more words to describe the true memories, and they rated the true memories as being somewhat more clear. But if an onlooker were to observe many of our participants describe an event, it would be difficult indeed to tell whether the account was of a true or a false memory.

Of course, being lost, however frightening, is not the same as being abused. But the lost-in-the-mall study is not about real experiences of being lost; it is about planting false memories of being lost. The paradigm shows a way of instilling false memories and takes a step toward allowing us to understand how this might happen in real-world settings. Moreover, the study provides evidence that people can be led to remember their past in different ways, and they can





RECALL OF PLANTED CHILDHOOD EVENTS in this study appears to increase slightly after the details become familiar to the subject and the source of the information is forgotten. Ira Hyman and his colleagues at Western Washington University presented subjects with true events provided by relatives along with a false event—such as spilling a punch bowl on the parents of the bride at a wedding. None of the participants remembered the false event when first told about it, but in two follow-up interviews, initially 18 percent and later 25 percent of the subjects said they remembered something about the incident.

FALSE MEMORY TOOK ROOT in roughly 25 percent of the subjects in this study by the author and her co-workers. The study was designed to create a false recollection of being lost at age five on a shopping trip. A booklet prepared for each participant included the false event and three events that he or she had actually experienced. After reading the scenarios, 29 percent of the subjects "recalled" something about being lost in the mall. Follow-up interviews showed there was little variation over time in recalling both the false and true events.

even be coaxed into "remembering" entire events that never happened.

Studies in other laboratories using a similar experimental procedure have produced similar results. For instance, Ira Hyman, Troy H. Husband and F. James Billing of Western Washington University asked college students to recall childhood experiences that had been recounted by their parents. The researchers told the students that the study was about how people remember shared experiences differently. In addition to actual events reported by parents, each participant was given one false event—either an overnight hospitalization for a high fever and a possible ear infection, or a birthday party with pizza and a clown—that supposedly happened at about the age of five. The parents confirmed that neither of these events actually took place.

Hyman found that students fully or partially recalled 84 percent of the true events in the first interview and 88 percent in the second interview. None of the participants recalled the false event during the first interview, but 20 percent said they remembered something about the false event in the second interview. One participant who had been exposed to the emergency hospitalization story later remembered a male doctor, a female nurse and a friend from church who came to visit at the hospital.

In another study, along with true events Hyman presented different false events, such as accidentally spilling a bowl of punch on the parents of the bride at a wedding reception or having to evacuate a grocery store when the overhead sprinkler systems erroneously activated. Again, none of the participants recalled the false event during the first interview, but 18 percent remembered something about it in the second interview and 25 percent in the third interview. For example, during the first interview, one participant, when asked about the fictitious wedding event, stated, "I have no clue. I have never heard that one before." In the second interview, the participant said, "It was an outdoor wedding, and I think we were running around and knocked something over like the punch bowl or something and made a big mess and of course got yelled at for it."

Imagination Inflation

The finding that an external suggestion can lead to the construction of false childhood memories helps us understand the process by which false memories arise. It is natural to wonder whether this research is applicable in real situations such as being interrogated by law officers or in psychotherapy. Although strong suggestion may not routinely occur in police questioning or therapy, suggestion in the form of an imagination exercise sometimes does. For instance, when trying to obtain a confession, law officers may ask a suspect to imagine having participated in a criminal act. Some mental health professionals encourage patients to imagine childhood events as a way of recovering supposedly hidden memories.

Surveys of clinical psychologists reveal that 11 percent instruct their clients to "let the imagination run wild," and 22 percent tell their clients to "give free rein to the imagination." Therapist Wendy Maltz, author of a popular book on childhood sexual abuse, advocates telling the patient: "Spend time imagin-

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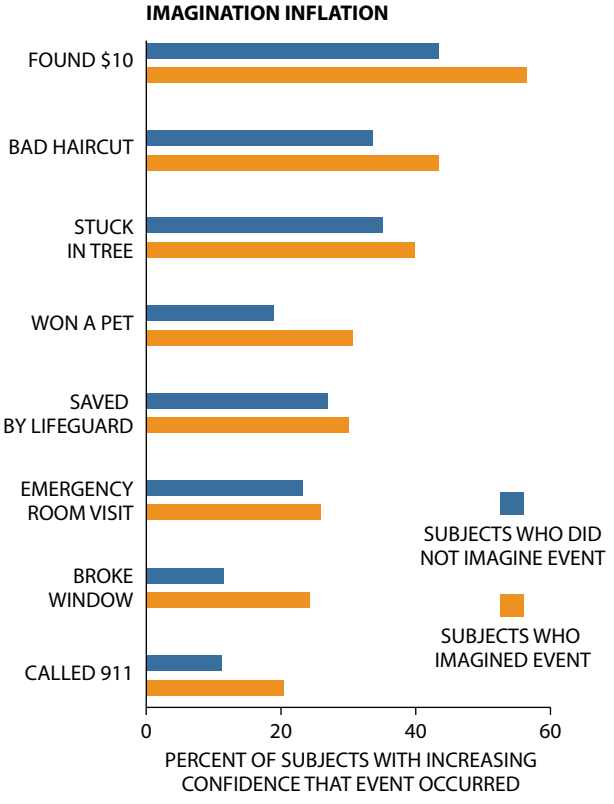
ing that you were sexually abused, without worrying about accuracy, proving anything, or having your ideas make sense.... Ask yourself...these questions: What time of day is it? Where are you? Indoors or outdoors? What kind of things are happening? Is there one or more person with you?" Maltz further recommends that therapists continue to ask questions such as "Who would have been likely perpetrators? When were you most vulnerable to sexual abuse in your life?"

The increasing use of such imagination exercises led me and several colleagues to wonder about their consequences. What happens when people imagine childhood experiences that did not happen to them? Does imagining a childhood event increase confidence that it occurred? To explore this, we designed a three-stage procedure. We first asked individuals to indicate the likelihood that certain events happened to them during their childhood. The list contains 40 events, each rated on a scale ranging from "definitely did not happen" to "definitely did happen." Two weeks later we asked the participants to imagine that they had experienced some of these events. Different subjects were asked to imagine different events. Sometime later the participants again were asked to respond to the original list of 40 childhood events, indicating how likely it was that these events actually happened to them.

Consider one of the imagination exercises. Participants are told to imagine playing inside at home after school, hearing a strange noise outside, running toward the window, tripping, falling, reaching out and breaking the window with their hand. In addition, we asked participants questions such as "What did you trip on? How did you feel?"

In one study 24 percent of the participants who imagined the broken-window scenario later reported an increase in confidence that the event had occurred, whereas only 12 percent of those who were not asked to imagine the incident reported an increase in the likelihood that it had taken place. We found this "imagination inflation" effect in each of the eight events that participants were asked to imagine. A number of possible explanations come to mind. An obvious one is that an act of imagination simply makes the event seem more familiar and that familiarity is mistakenly related to childhood memories rather than to the act of imagination. Such source confusion—when a person does not remember the source of information—can be especially acute for the distant experiences of childhood.

Studies by Lyn Goff and Henry L. Roediger III of Washington University of recent rather than childhood experiences more directly connect imagined actions to the construction of false memory. During the initial session, the researchers instructed participants to perform the stated action, imagine doing it or just listen to the statement and do nothing else. The actions were simple ones: knock on the table, lift the stapler, break the toothpick, cross your fingers, roll your eyes. During the second session, the participants were asked to imagine some of the actions that they had not previously performed. During the final session, they answered questions about what actions they actually performed during the initial session. The investigators found that the more times participants imagined an unperformed action, the more likely they were to remember having performed it.



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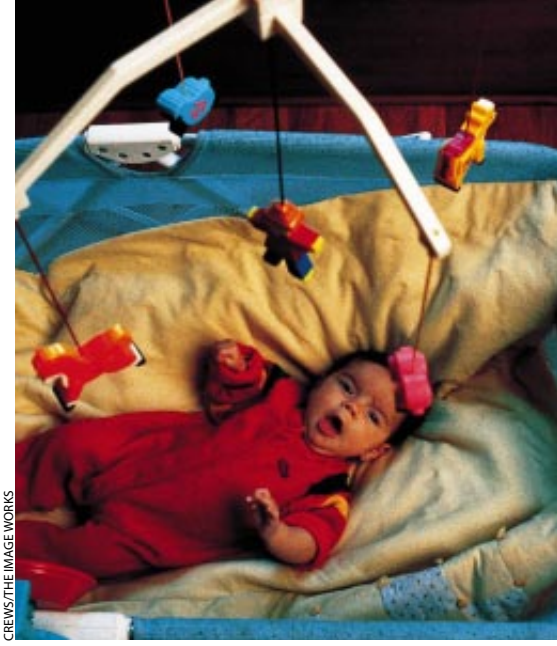
IMAGINING AN EVENT can increase a person's belief that the fictitious event actually happened. To study the "imagination inflation" effect, the author and her colleagues asked participants to indicate on a scale the likelihood that each of 40 events occurred during their childhood. Two weeks later they were given guidance in imagining some of the events they said had not taken place and then were asked to rate the original 40 events again. Whereas all participants showed increased confidence that the events had occurred, those who took part in actively imagining the events reported an even greater increase.

Impossible Memories

It is highly unlikely that an adult can recall genuine episodic memories from the first year of life, in part because the hippocampus, which plays a key role in the creation of memories, has not matured enough to form and store long-lasting memories that can be retrieved in adulthood. A procedure for planting "impossible" memories about experiences that occur shortly after birth has been developed by the late Nicholas Spanos and his collaborators at Carleton University. Individuals are led to believe that they have well-coordinated eye movements and visual exploration skills probably because they were born in hospitals that hung swinging, colored mobiles over infant cribs. To confirm whether they had such an experience, half the participants are hypnotized, age-regressed to the day after birth and asked what they remembered. The other half of the group participates in a "guided mnemonic restructuring" procedure that uses age regression as well as active encouragement to re-create the infant experiences by imagining them.

Spanos and his co-workers found that the vast majority of their subjects were susceptible to these memory-planting procedures. Both the hypnotic and guided participants reported infant memories. Surprisingly, the guided group did so somewhat more (95 versus 70 percent). Both groups remembered the colored mobile at a relatively high rate (56 percent of the guided group and 46 percent of the hypnotic subjects). Many participants who did not remember the



CREWS/THE IMAGE WORKS

MEMORIES OF INFANCY—such as a mobile hanging over a crib—can be induced even though it is highly unlikely that events from the first year of life can be recalled. In a study by the late Nicholas Spanos and his colleagues at Carleton University, "impossible" memories of the first day of life were planted using either hypnosis or a guided mnemonic restructuring procedure. The mobile was "remembered" by 46 percent of the hypnotized group and by 56 percent of the guided group.

mobile did recall other things, such as doctors, nurses, bright lights, cribs and masks. Also, in both groups, of those who reported memories of infancy, 49 percent felt that they were real memories, as opposed to 16 percent who claimed that they were merely fantasies. These findings confirm earlier studies that many individuals can be led to construct complex, vivid and detailed false memories via a rather simple procedure. Hypnosis clearly is not necessary.

How False Memories Form

In the lost-in-the-mall study, implantation of false memory occurred when another person, usually a family member, claimed that the incident happened. Corroboration of an event by another person can be a powerful technique for instilling a false memory. In fact, merely claiming to have seen a person do something can lead that person to make a false confession of wrongdoing.

This effect was demonstrated in a study by Saul M. Kassin and his colleagues at Williams College, who investigated the reactions of individuals falsely accused of damaging a computer by pressing the wrong key. The innocent participants initially denied the charge, but when a confederate said that she had seen them perform the action, many participants signed a confession, internalized guilt for the act and went on to confabulate details that were consistent with that belief. These findings show that false incriminating evidence can induce people to accept guilt for a crime they did not commit and even to develop memories to support their guilty feelings.

Research is beginning to give us an understanding of how false memories of complete, emotional and self-participatory experiences are created in adults. First, there are social demands on individuals to remember; for instance, researchers exert some pressure on participants in a study to come up with memories. Second, memory construction by imagining events can be explicitly encouraged when people are having trouble remembering. And, finally, individuals can be encouraged not to think about whether their constructions are real or not. Creation of false memories is most likely to occur when these external factors are present, whether in an experimental setting, in a therapeutic setting or during everyday activities.

False memories are constructed by combining actual memories with the content of suggestions received from others. During the process, individuals may forget the source of the information. This is a classic example of source confusion, in which the content and the source become dissociated.

Of course, because we can implant false childhood memories in some individuals in no way implies that all memories that arise after suggestion are necessarily false. Put another way, although experimental work on the creation of false memories may raise doubt about the validity of long-buried memories, such as repeated trauma, it in no way disproves them. Without corroboration, there is little that can be done to help even the most experienced evaluator to differentiate true memories from ones that were suggestively planted.

The precise mechanisms by which such false memories are constructed await further research. We still have much to learn about the degree of confidence and the characteristics of false memories created in these ways, and we need to discover what types of individuals are particularly susceptible to these forms of suggestion and who is resistant.

As we continue this work, it is important to heed the cautionary tale in the data we have already obtained: mental health professionals and others must be aware of how greatly they can influence the recollection of events and of the urgent need for maintaining restraint in situations in which imagination is used as an aid in recovering presumably lost memories. SA

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Further Reading

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