of the direction from which you began your journey. If asked to point to some of these mental representations, you would likely indicate the correct direction for some, but not for others. In other words, you would have developed a cognitive map of your route, but it would seldom be perfect. Bell and Saucier asked participants to do just this and found that greater levels of testosterone, the primary male sex hormone, were significantly related to increased accuracy in these pointing tasks, indicating a clearer understanding of the cognitive maps the participants formed during their environmental experiences.

So, does this mean that men ask for directions less than women do because men already know where they are? No. As intriguing as these findings are, a great deal more research will be needed to answer that one!


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**Reading 16: THANKS FOR THE MEMORIES!**


**PERRY MASON:** Hamilton, I believe that my client is telling the truth when she says she was nowhere near the scene of the crime.

**HAMILTON BURGER:** Perry, why don’t we let the jury decide?

**PERRY MASON:** Because, Hamilton, I don’t believe there is going to be a trial. You haven’t got a case. All you have is circumstantial evidence.

**HAMILTON BURGER:** Well, Perry, I suppose this is as good a time as any to tell you. We have someone who saw the whole thing, Perry. We have an eyewitness!

And, as the mysterious music rises in a crescendo, we know that this is going to be another difficult case for the most victorious TV lawyer of all time, Perry Mason. Even though we are reasonably certain Mason will prevail in the end, the presence of a single eyewitness to the crime has seemingly changed a weak case into a nearly airtight one for the district attorney. Why do people believe that eyewitness reports provide such strong evidence in criminal cases? The reason is that we tend to believe that the way in which a person remembers an event must be the way it actually happened. In other words,
groups of participants saw the same film and answered the same questions, except for the reference to 12 versus 4 demonstrators.

The group that had received the question presupposing 12 demonstrators reported seeing an average of 8.85. Those who had received the question asking about 4 demonstrators averaged 6.40. This was also a significant difference. This experiment showed that, on average, the wording of one question altered the way participants remembered the basic characteristics of a witnessed event.

**Experiment 3**

This third experiment was designed to see if a false presupposition inherent in a question could cause witnesses to reconstruct their memory of an event to include objects that, in reality, were not there. The participants (150 university students) watched a short video of an accident involving a white sports car and then answered 10 questions about the content of the video. One question included for only half the participants was “How fast was the white sports car going *when it passed the barn* while traveling along the country road?” The other half of the participants were asked “How fast was the white sports car going while traveling along the country road?” As in the previous study, the participants returned a week later and answered 10 new questions about the accident. The question under study was “Did you see a barn?”

Of those participants who had previously answered a question in which a barn was mentioned, 13 (17.3%) of them answered “yes” to the test question, compared with only 2 (2.7%) in the no-barn group. Once again, this was a statistically significant difference.

**Experiment 4**

The final experiment reported in this article was somewhat more elaborately designed to meet two goals. First, Loftus wanted to further demonstrate the memory reconstruction effects found in Experiment 3. Second, she wondered if perhaps just the mention of an object, even if it was not included as part of a false presupposition, might be enough to cause the object to be added to memory. For example, imagine you are asked directly “Did you see a barn?” when no barn was depicted in the film. You will probably answer “no.” But if you are asked again a week later, might that barn have crept into your memory of the event? This is what Loftus tested in the fourth experiment.

Three groups of 50 participants viewed a 3-minute film shot from the inside of a car that ends with the car colliding with a baby carriage pushed by a man. The three groups then received booklets containing questions about the film. These booklets differed as follows:

*Group D*: The direct question group received booklets containing 40 “filler” questions and 5 key questions directly asking about nonexistent objects—for example, “Did you see a barn in the film?” (See Table 16-1.)

*Group F*: The false presupposition group received the same 40 filler questions and 5 key questions that contained presuppositions about the
TABLE 16-1 Appearance of Nonexistent Objects in Participants’ Recall of Filmed Accident Following Direct Questions and False Presuppositions

<table>
<thead>
<tr>
<th>DIRECT QUESTION</th>
<th>FALSE PRESUPPOSITION</th>
<th>PERCENT OF “YES” RESPONSES TO DIRECT QUESTION 1 WEEK LATER BY GROUP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did you see a school bus in the film?</td>
<td>Did you see the children getting on the school bus?</td>
<td>D  C  F</td>
</tr>
<tr>
<td>Did you see a truck in the beginning of the film?</td>
<td>At the beginning of the film, was the truck parked beside the car?</td>
<td>12  6  26</td>
</tr>
<tr>
<td>Did you see a center line on the country road?</td>
<td>Did another car cross the center line on the country road?</td>
<td>8  0  22</td>
</tr>
<tr>
<td>Did you see a woman pushing the carriage?</td>
<td>Did the woman pushing the carriage cross into the road?</td>
<td>14  8  26</td>
</tr>
<tr>
<td>Did you see a barn in the film?</td>
<td>Did you see a station wagon parked in front of the barn?</td>
<td>36  26  54</td>
</tr>
</tbody>
</table>

C = control group  
D = direct-question group  
F = false-presupposition group  
(Adapted from p. 568.)

same nonexistent objects, such as, “Did you see a station wagon parked in front of the barn?”

Group C: The control group received only the 40 filler questions.

One week later all the participants returned and answered 20 new questions about the film. Of the questions, 5 were the exact same questions as were asked of the direct-question group a week before. So, group D saw those 5 questions twice. The dependent measure (the result) was the percentage of participants in each group who claimed to remember the nonexistent objects.

Table 16-1 summarizes the findings for all three groups. Remember, the film included no school bus, truck, center line on the road, woman pushing the carriage, or barn. Combining all the questions, the overall percentages of those participants answering “yes” to the direct questions 1 week later were 29.2% for the false-presupposition group, 15.6% for the direct-question group, and 8.4% for the control group. The differences between the direct-question group and the false-presupposition group for each item, as well as for all the items combined, were statistically significant.

DISCUSSION

Based on these and other studies, Loftus argued that an accurate theory of memory and recall must include a process of reconstruction when new information is integrated into the original memory of an event. The findings of these studies cannot be explained by assuming that recall simply involves a mental replaying of an event, even with varying degrees of accuracy.
To illustrate, Figure 16-1 compares the traditional view of recall with the reformulated process proposed by Loftus. As you can see, the extra step of integrating new information into memory has been added. This new information, in turn, causes your representation of the original memory to be altered or reconstructed. Later, if you are asked a question about the event, your recall will not be of the actual original event but, rather, your reconstruction of it. Loftus contended that this reconstruction process was the reason that barns, school busses, trucks, women pushing baby carriages, and center lines in roads were all conjured up in participants’ memories when they were not part of the original experience. The false presupposition in the questions provided new information that was unintentionally integrated into the participants’ memories of the event.

Applying this idea to eyewitnesses in criminal investigations, Loftus pointed out that witnesses to a crime are often questioned more than once. They might be asked questions by police at the scene of the crime, interviewed by the prosecuting attorney assigned to the case, and again questioned in

![Diagram of recall process]

**FIGURE 16-1** Recall of an event in response to a question.
During these various question-and-answer sessions, it is not unlikely that false presuppositions will be made, possibly unintentionally, in numerous ways. Common, innocent-sounding questions such as “What did the guy’s gun look like?” or “Where was the getaway car parked?” have been shown to increase the chances that witnesses will remember a gun or a getaway car whether or not those items were actually there (Smith & Ellsworth, 1987). Although the attorneys, the judge, and the jury are making the assumption that the witness is re-creating what was actually seen, Loftus contends that what is being remembered by the witness is a “regenerated image based on the altered memorial representation” (p. 571).

RECENT APPLICATIONS

Several studies represent the ongoing influence of Loftus’s impressive body of work on eyewitness testimony. One study citing her 1975 article examined how lawyers’ complicated questions negatively affect eyewitness accuracy and confidence (Keppel & Giles, 2000). All participants watched identical videotaped events and were questioned a week later about what they saw. Half the participants were asked questions in confusing language (you know, that lawyer-speak of “Is it not true that . . .?”), while others were asked the same questions in simple language. The results were clear: The participants receiving the confusing form of the questions were less accurate in their eyewitness reports and were also less confident of their answers than those in the straightforward-question condition. Other research has demonstrated that when eyewitnesses are shown more than one photographic lineup of criminal suspects (a common event in law enforcement), their accuracy in identifying the correct perpetrator decreases significantly as they incorporate the newer faces into their reconstruction of the original event (Pezdek & Blandon-Gilpin, 2005).

Another intriguing study applied Loftus’s work to reports of “fantastic memories,” that is, memories that bear greater similarity to fantasy than reality, such as alien abductions, out-of-body experiences, extrasensory perception (ESP) events, encounters with ghosts, and so on (French, 2003). Clearly, if these reports of memories were true, they would provide proof that these paranormal occurrences are real. However, research tells us time and time again that such events have never been scientifically demonstrated. So, what accounts for the memories? The answer may lie in the fallibility and unreliability of human memory as discussed in this reading and, perhaps, the ability of our brains to create memories of events that never actually happened. As French points out, “A number of psychological variables that have been shown to correlate with susceptibility to false memories (e.g., hypnotic susceptibility, tendency to dissociate, etc.) also correlate with the tendency to report paranormal experiences” (French, p. 153).

In addition to her ongoing work in the area of eyewitness testimony, Elizabeth Loftus is currently one of the leading experts in the heated controversy over repressed childhood memories. On one side of this debate are those people who claim to have been abused sexually sometime in their past
but who have only recently, often with the help of a therapist, remembered
the abuse. The usual explanation for the sudden recall of these victims
assumes that the traumatic memories have been repressed in the unconscious
and have only recently been revealed. On the other side are those who are
suddenly accused of the abuse but who categorically deny it and claim that
these memories are pure fantasy or have been somehow implanted during
therapy (see Garry & Loftus, 1994, for a review of this controversy). This falls
squarely into the area of Loftus’s memory research.

Loftus’s book *The Myth of Repressed Memories: False Memories and Allegations
of Sexual Abuse* (Loftus & Ketcham, 1994) summarized her findings in this area
and combined them into a cohesive argument. Loftus contends, and appears
to have demonstrated in numerous studies, that repressed memories simply
do not exist. In fact, she is at the forefront of psychologists who question the
entire notion and existence of an unconscious. A main feature of Loftus’s
argument is that experimental evidence repeatedly demonstrates that espe-
cially traumatic memories tend to be the ones we remember best. And yet,
iclinicians often report these instances of repressed memories of sexual abuse
that rise to the surface during specific and intense forms of therapy. How can
these two seemingly opposing views be reconciled? Loftus suggests three pos-
sible memory distortions that might explain what clinicians see as repression
(Loftus, Joslyn, & Polage, 1998). First, early sexual abuse may simply be forgotten,
not repressed. She cites research demonstrating that when children do
not understand the sexual nature of an abusive event, it tends to be remem-
bered poorly. Second, it is possible that people in therapy *say* they had no
memory of a traumatic event, but, in reality, they never actually forgot it.
Avoiding thinking about something is different than forgetting it. And third,
Loftus contends that some “people may believe that a particular traumatic
event occurred and was repressed when, in fact, it did not happen in the
first place. Under some circumstances, some combination of these distortions
could lead to situations that are interpreted as repression” (p. 781).

You can imagine that Loftus’s position on repressed and recovered
memories is not without critics (e.g., Spitzer & Avis, 2006; Steinberg, 2000).
After all, her rejection of the power of repression is opposed to commonly
held beliefs about psychology and psychotherapy that have been around since
Freud. Moreover, many therapists and victims have a very personal stake in
their belief that memories of abuse can be repressed for years and later recov-
ered. However, a careful reading of Loftus’s thorough and careful scientific
work should cause anyone to question this belief.

**CONCLUSION**

Elizabeth Loftus is considered by most to be the leading researcher in the
areas of memory reconstruction and eyewitness inaccuracy. Her research in
these areas continues. Her findings over the years have held up quite well to
challenges and have been supported by other researchers in the field.
Little doubt exists within the psychological and legal professions today that eyewitness reports are subject to many sources of error such as postevent information integration. Because of the body of research by Loftus and others, the power and reliability of eyewitnesses in judicial proceedings are now justifiably questioned. Loftus has been one of the most sought-after expert witnesses (usually for the defense) to demonstrate to juries the care they must use when evaluating the testimony of eyewitnesses.

As Loftus herself summarizes in her 1994 book, "I study memory and I am a skeptic" (Loftus & Ketcham, 1994, p. 7). Perhaps we all should be.


