

Loftus and Palmer (1974)

Reconstruction of Automobile Destruction: An Example of the Interaction Between Language and Memory

Background aim: The background to this comprises theories of the reconstructive nature of memory, including studies into **schema theory**, flashbulb memory and autobiographical memory. At the end of their journal article, Loftus and Palmer state: "(I)t is natural to conclude that the label, smash, causes a shift in the memory representation of the accident in the direction of being more similar to a representation suggested by the **verbal label**" (Loftus and Palmer, 1974, p.588). This is very similar to schema theory, and it could be argued that "smashed" suggests a "serious accident" schema that then triggers the higher estimate of speed, and the suggestion of broken glass at the scene. However, it is worth noting that Loftus and Palmer's study itself is not an investigation of schema theory.

The aim of the study was to investigate how information provided after an event had occurred influenced the memory of a witness for that event. In this case, the information was a change in wording of a **critical question**.

Method: Two **laboratory experiments** were used for two segments of the study, each adopting an **independent measures design**. The researchers used a sample of 45 college students of the University of Washington for the first experiment and 150 participants for the second.

Experiment 1 - Participants were shown seven 5-30 seconds film clips of traffic accidents. The clips were excerpts from safety films made for driver education. After each film they filled a questionnaire about what they had seen. They were also asked some questions about the accident. The critical question (**IV**) here was, "About how fast were the cars going when they **hit** each other?" Different conditions were used, where the verb was changed to "smashed", "collided", **bumped** and "**contacted**". Participants had to estimate the speed in miles per hour.

The films were shown in **different orders** in each condition. This experiment was conducted over one and half hours.

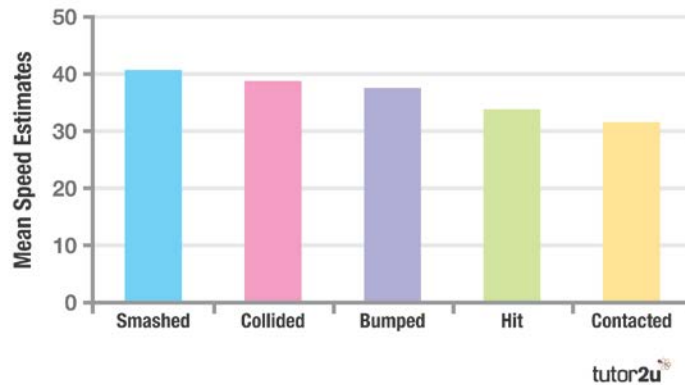
Experiment 2 - 150 participants were divided into three groups. All participants watched a one-minute film on a multiple-car accident. They then answered some questions about the film. The critical question was, "How fast were the cars going when they **hit** each other?" The verb was changed to "**smashed**" in the comparison group. The control group was not asked to estimate the speed.

The participants were asked to return a **week later**. They were not shown the film again but asked several questions about the accident in the film. The **critical question** was, "Did you see into broken glass?" They had to answer in terms of "yes" or "no". The question was placed in a random position in each question paper. The video did not have any broken glass.

Results

Experiment 1:

 **Experiment 1** Speed estimates in mph according to verb used



When the critical question had the word “smashed” or “collided”, speed estimates were higher than for the other words. For “smashed” it was 40.8 mph, for “collided” 39.3mph, while for “contacted” the estimate was 31.8 mph.

Experiment 2

The word “smashed”, which implies a more forceful impact, drew more than twice as many “yes” responses as when the word “hit” was used and as compared with the control group.

 **Experiment 2**
Response to the question
“Did you see any broken glass?”

Response	Smashed	Hit	Control
Yes	16	7	6
No	34	43	44

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Conclusions

Experiment 1: The speed estimate was **moderated** by the verb used to describe the **intensity** of the crash. The greater the intensity conveyed by the word, the higher the speed estimate to match it.

The researchers also suggested that the estimate could be the result of **demand characteristics**. Since the participants were unsure of the speed, they offered a figure that they thought would be most suited for the purpose of the study. Again, the choice of verb acted as cue to make the participant guess what range of speed the researcher might be looking for.

Experiment 2: The estimates of the presence of glass **increased** with the **intensity** of the verb used to describe the crash.

General Conclusion: **Leading questions** can alter the memory of events and lead to distortions. One initial change in wording can have prolonged effects on memory. Loftus and Palmer offered the **reconstructive hypothesis** to explain the phenomenon: A person obtains two kinds of information about an event (**complex occurrence**) – the first is the information obtained from perceiving the event itself; the second is the information supplied or acquired after the event. If there is some difference between the **two sources**, integration of post-event information can lead to memory distortions. The experiments demonstrate how external cues, such as leading questions or a suggested line of thinking, made available after an event can affect our subsequent memory of that event. Information from the two sources integrates over time and we are therefore unable to tell whether our memory is accurate because we do not know which of the sources it came from.

Evaluation

Data: Loftus and Palmer obtained **quantitative data** from their study, this allows for subsequent statistical analysis. Mean speed estimates were calculated, percentages of yes and no responses could also be easily found, results could be represented in graphs charts quite easily. However, quantitative data does not give us detail of the reasons for their answers.

Validity: The **ecological validity** of the study is low, because it was a **laboratory experiment** so the results cannot be generalised unconditionally to a larger population. Being conducted in an **artificial** environment, the study also lacked in realism. People are likely to react differently when witnessing a real life scenario similar to the one shown in the video, because of their actual presence and likely personal involvement. The participants might have also responded to **demand characteristics**, as they may have worked out the aim of the study.

Sampling Bias: Participants were all students, such a group would be typically more intelligent and have better memories than other populations. No information is available about the driving skills or experiences of the participants, but is likely to be much less in a younger group of participants. This ability (or lack of it) could have influenced their estimate of speed more so than older, more experienced drivers.

Exam Style Questions

1. In Loftus and Palmer's study what was the experimental design that was used? (1)
 - A. Independent Measures
 - B. Lab experiment
 - C. Matched Pairs
 - D. Repeated Measures
2. Identify the two types of information that go into a complex occurrence. (2)
3. Describe the results in Loftus and Palmer's second experiment. (3)
4. Describe why Loftus and Palmer's study may have sampling bias. (4)

Exam Style Questions – With Answers

1. In Loftus and Palmer's study what was the experimental design that was used? (1)

A. Independent Measures

2. Identify the two types of information that go into a complex occurrence. (2)

The first kind of information is from witnessing the event and the person's perception of what happened. The second type of any post-event information that has been provided, this could be misleading information or a leading question.

3. Describe the results in Loftus and Palmer's second experiment. (3)

Although there was no broken glass - 32% of smashed condition reported that there was, this compared to only 14% of those in the hit condition and 12% of participants in the control. The results showed that misleading information can distort people's memories.

4. Describe why Loftus and Palmer's study may have sampling bias. (4)

Participants were all American students, therefore they are not a generalisable group of people. Students are likely to have better memories than a 'normal' person because they are used to remembering things for exams. Undergraduates are also above average intelligence and are also more likely to have worked out the aim and showed demand characteristics. A final issue with the sample is that they are less likely to be drivers, or if they are, they would have limited experience and therefore would not be as good at estimating speeds as other samples and so could have been influenced more by the post-event information. Overall, the results could have been very different if another sample had been used.