

# Teaching and experiencing the misinformation effect: A classroom exercise

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*Students from four sections of Introduction to Psychology (N=82) were taught that participating in a classroom exercise may make memories vulnerable to the misinformation effect. All students were shown a short video clip of a car wreck. Students were then asked either 'leading' or 'non-leading' questions about the video clip. Students were also asked to rate how reliable they believed their memories to be. Responses to the questions were statistically analysed. This classroom exercise was found to be a simple and useful way of allowing students to experience firsthand the way in which memories may be distorted.*

RESEARCH consistently shows that our memories are not exact representations of previous events (e.g. Loftus & Ketcham, 1991; Kassin, Rigby & Castillo, 1991). In this regard, after witnessing an event, there are numerous factors that can cause memories to be inaccurate when a person tries to recall an event. For example, when a police officer asks an eyewitness to recall a crime, if the police officer's questions contain new information that was not actually a part of the actual crime, this new information can alter the eyewitness' memory of the crime (Belli & Loftus, 1996). This is often referred to as the 'misinformation effect' (Loftus & Hoffman, 1989). The misinformation effect can occur in other ways as well. In a seminal study conducted by Loftus and Palmer (1974), research participants watched a filmed traffic accident, and then they were asked, 'About how fast were the cars going when they \_\_\_\_\_ (smashed into, hit, or contacted) each other?' The participants' responses were influenced by whatever verb was used in the question. When 'smashed into' was used in the question, this led participants to rate the speed in miles per hour higher than when the other verbs were used in the questions.

Research has indicated that if an object such as a knife is mentioned during questioning about an incident, it will often be

remembered as having been a part of the actual incident even though it was not present (Dodson & Reisberg, 1991). Other research examining the misinformation effect indicates that hearing new information about an event can make it more of a challenge for people when they are trying to retrieve the original memory (Tversky & Tuchin, 1989). There are also occasions when new information gets integrated in to an old memory, and the new information and the old memory become so intertwined that they become virtually impossible to untangle (Loftus, 1992).

When explaining the misinformation effect to students, it has been our experience that students often find this research difficult to believe. Students have a hard time understanding how memories are not exact, video recording-like representations of an event. Additionally, it has been our experience that when students are asked if their own memories would be subject to the misinformation effect, students often respond that they do not fall victim to the misinformation effect. This study was conducted in order to demonstrate how a simple experiential classroom exercise can be used for explaining the misinformation effect and showing students how the misinformation effect can occur in their own lives.

**Method**

**Participants**

Participants consisted of 82 students enrolled in four sections of the authors' Introduction to Psychology courses. Thirty-five per cent of the students were female and 65 per cent were male. Nineteen per cent of the students were African-American, 23 per cent were Hispanic, and 58 per cent were Caucasian. Students ranged in age from 18- to 34-years-old.

**Procedure**

Three weeks prior to the classroom unit on memory, students watched a video clip and then answered questions related to the clip. The exercise was introduced to the students with the statement, 'This is an activity that we are going to do in preparation for one of our upcoming class topics. Watch the video carefully and then you will have some questions to answer.'

*Video Clip.* A 20-second video of a car accident, which had been obtained from the internet, was played for the students. The clip showed an SUV on a highway begin to swerve, careen out of control, and roll over one-and-a-half times, coming to rest on its roof. Three vehicles, including a large truck, were visible in front of the SUV, and there were two cars behind it. The sound of the tires screeching and the SUV rolling over were audible on the clip, and some debris was evident during the rollover. No injuries were evident and only the SUV was involved in the accident. The URL for the video clip was: [www.youtube.com/watch?v=FxOmOFFZJi8](http://www.youtube.com/watch?v=FxOmOFFZJi8)

*Memory questions.* After watching the video, all students were told they would be asked to write down their answers to six questions about the video. Students were asked not to write their names on their papers so that their responses would be completely anonymous.

**Table 1: Descriptive statistics for Non-leading vs. Leading memory questions.**

	<i>M</i>	<i>SD</i>	Range
How fast was the car going in terms of miles per hour when it began to roll over?	51.83	17.02	10.0 – 85.0
<i>The speeding car that was following the truck began to roll over. How fast was the car going in terms of miles per hour?</i>	64.40*	16.75	27.0 – 100.0
How many times did the car roll over?	1.88	.77	0.5 – 4.0
<i>The car rolled over numerous times. How many times did the car roll over?</i>	2.11	.77	1.0 – 4.0
How many other cars appear in the scene?	2.3	.59	2.0 – 4.5
<i>There were numerous other cars in the scene. How many other cars were there in the scene?</i>	3.46**	1.17	2.0 – 6.0
	%		
Did you see any people standing beside the road?	4.3 <sup>a</sup>		
<i>How many people did you see standing beside the road?</i>	11.4 <sup>a</sup>		

Note: Leading memory questions are italicised.

<sup>a</sup> Percentage of students who reported seeing people by the road.

\**p*<.01; \*\**p*<.001

mous. Students' written answers to the questions were collected and served as data for analysis. Two sections of Introduction to Psychology (one per author) received a set of four non-leading questions about the video. These were straightforward questions requesting students to recall facts and provide estimates about the event in the video. Two other sections (again, one per author) received a set of four very similar questions; however, these questions contained leading information. The questions can be seen in Table 1. Table 2 shows two other questions which were given to students in both leading and non-leading question groups.

### Results

Students who received the leading questions appeared to be influenced by the misinformation present in several questions they received. Compared to the non-leading group, the leading question group estimated

that the SUV was travelling at a higher speed,  $F(1,80)=11.09$ ,  $p=.001$ , and recalled more additional cars in the video,  $F(1,80)=34.11$ ,  $p<.001$ . Most students in both groups correctly recalled that there were no bystanders in the video. Only two students in the non-leading group and four students in the leading group erroneously remembered seeing people standing by the side of the road.

The item, 'Did you see a truck in the scene?' was given to both groups. A significant difference was found, with students in the leading question group more likely to have recalled the truck which was actually in the video,  $\chi^2(1, N=82)=8.34$ ,  $p<.01$ . Both groups rated their memories of the events in the video as 'somewhat accurate', and there were no differences between groups regarding the confidence they placed in their memories.

Table 2: Mean values for questions received by both Non-leading and Leading groups.

	Non-leading		Leading	
	M	SD	M	SD
Did you see a truck in the scene? <sup>a</sup>	1.40*	.50	1.11	.32
Rate how accurate you believe your memories to be regarding the scene in the video clip <sup>b</sup>	5.79	1.47	5.30	1.27

<sup>a</sup> Rating scale was Yes=1 and No=2 regarding whether a truck was seen.

<sup>b</sup> Rating scale for accuracy of memories ranged from 1 ('Not at all accurate') to 10 ('Completely accurate') with a midpoint label of 'Somewhat accurate'.

\* $p<.01$

## **Discussion**

We found that our students responded positively to this classroom exercise. Showing the video and asking memory questions promoted students' curiosity about the topic of memory formation prior to covering it. Seeing data which included their own responses also helped students to have a personal investment in understanding memory formation and how it can be distorted via the misinformation effect. Presenting the data to the students in terms of statistical significance levels provided a chance for us to reinforce research concepts covered several weeks earlier.

Our significant findings regarding estimating the speed of the SUV and the number of cars remembered in the video were used to introduce the misinformation effect, and served as a natural preface to discussion of seminal research in this area (e.g. Loftus & Palmer, 1974). Classroom discussion of the non-significant findings (number of bystanders and number of times the SUV rolled over) also proved to be valuable. For example, this provided students with an opportunity to engage in critical thinking about why no significant between-group differences were evident. This classroom exercise assisted in providing a good lead-in to topics such as selective attention to details of an episode and the limits of the misinformation effect. Students were able to recognise and discuss how the misinformation effect can cause problems in their own lives. Students were also able to recognise and discuss how being aware of the misinformation effect can prevent them from overstating the accuracy of their memories in real life situations such as being involved in a car accident or witnessing a verbal confrontation among friends.

Finally, discussion of why there were no between-group differences in accuracy ratings was an important didactic piece of the exercise. Most students acknowledged feeling a moderate level of confidence in their memories, but the results allowed us to process with students the difference between confidence in memories and the actual accuracy of memories. The students did seem to show an emotional attachment to their memories. For example, they were curious whether their class was in the leading question or non-leading question condition, and some of the students in the leading question condition insisted their class had received non-leading questions! For this reason, we suggest that instructors be both cautious and sensitive in how they communicate results to their students. Perhaps the ideal solution would be to arrange the methodology of this exercise so that it is impossible to say which students were in which group, and this would be a good way to expose students to double-blind research methodology as well.

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