Great Experiments in Psychology
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Module 2
Lecture No 7
Reconstruction of an Automobile Destruction-An Example of the Interaction between Language and Memory

Hello everybody, welcome to the 7th lecture of the series on great experiment in psychology. In today's lecture we are going to discuss one of the major studies on memory, we have talked about Ebbinghaus and his research on memory and his pioneering research on learning and memory in the previous class. Today's class we are going to discuss about the applications of memory research. Is memory faulty? Is memory always correct? How do we process materials and how do we store it and later on how do we retrieve that materials, Ebbinghaus showed it in the laboratory situation.

Here in today's class we have going to discuss about the applications and its implications in different aspects of society. So to start off with today's lecture is going to be the reconstructions of an automobile destruction, is an example of the interaction between language and memory. This study is famous on its own account this was done by Elizabeth Loftus and she studied memory and how why do people make errors while reporting something and to say it in her own words. "The research that I and many other psychological scientists have done has taught us about the malleability of human memory. Thousands of experiment conducted over the last century revealed this truth that despite the value of human memory for allowing us to manage our lives effectively, it is not very hard to get people to remember things that never happened"

So is not this interesting so I chose this study of Loftus as one of the great experiment and great researchers in psychology because we have been talking about memory so now we will discuss about something where people store memory or people recall memories of events that had never happened, now do you think that is possible? It is possible I will just show you how.

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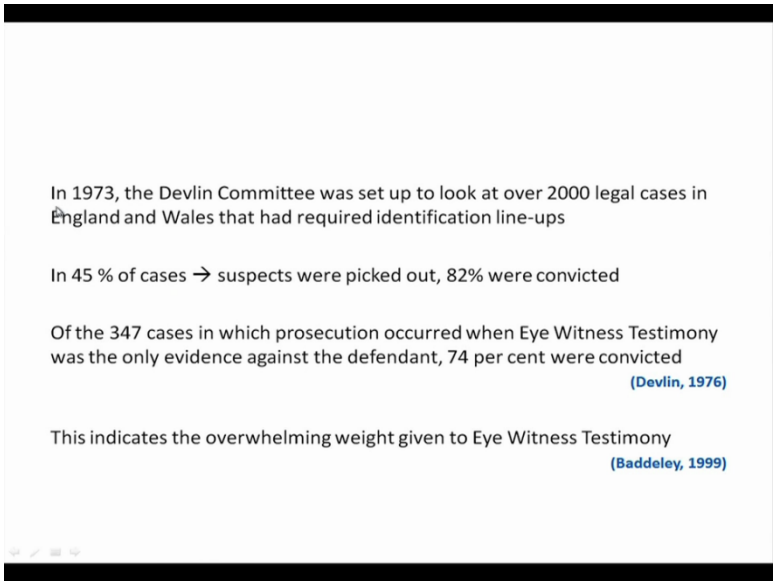

So basically the background of Loftus's study began in 1973 primarily when the Devlin committee was set up to look at 2000 legal cases in England and Wales that had required identification line-ups. So basically, where an individual for conviction had to be identified and primarily this is as you can well understand the applications of this memory research is on law primarily. So in 45% of the cases it was seen that the suspect was picked out and 82% of them were convicted. Of the 347 cases in which prosecution occurred when eye witness testimony was the only evidence against the defendant and 74% of them were convicted.

So just imagine that 74% of these 347 cases were prosecuted only on one individual's eyewitness testimony. So that is where there is just one individual vouching that he or she had seen this person this prosecuted on in a particular place or doing committing some action. So this indicates the overwhelming weight given to eyewitness testimony and this has been quoted by Baddeley in 1999. So, as you can see that there were several cases that were lining up in the legal cells where the law was actually banking upon one person's statement of evidence and that would be eyewitness testimony. So the reconstructive nature of memory led some researchers to question the eyewitness testimony.

So what is reconstruction, reconstruction is something that has happened and then the individual is asked to remember the events that had happened and we call it and again respond or stated in front of audience at a different time period. So says suppose think about yourself travelling in a public transport say two days back and if you try to recall how was the person who was sitting beside you looked like, try and reconstruct that and see how much of

it you can remember actually. Most of the information that we do not remember we try and fill in. We will see how that was done in this was showed by Loftus.

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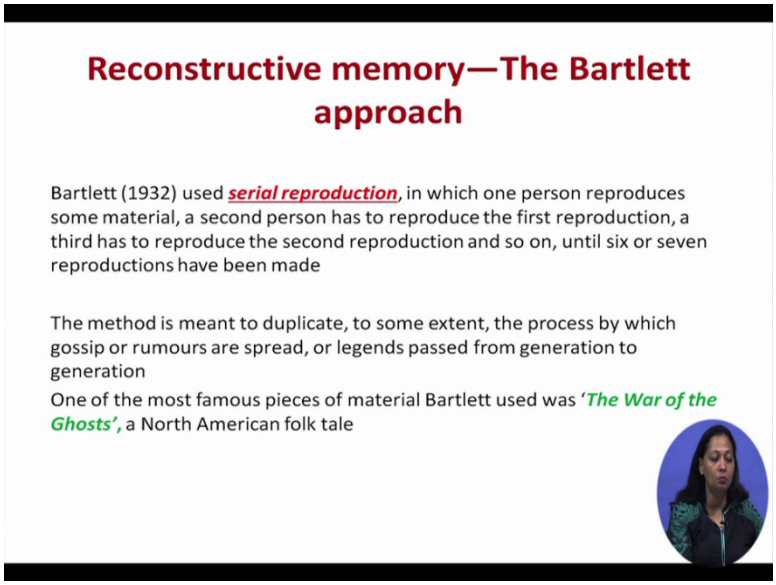

So reconstructive memory was this was this theory was put forth by Bartlett another researcher way back in 1932 and Bartlett use serial reproduction in which one person reproduces some material and second person has to reproduce the first reproduction in the third person reproduces the same thing and it goes on and on from one person to the other.

So basically you may have you may be familiar with again call Chinese whisper, when you whisper sentence to somebody and or say a paragraph to somebody and it moves from one individual to the other and finally when it comes back to you after completing a full circle, you will see that it was very different from what you have said in the first place. Now Bartlett used this method with one very famous North American folk tale call “the War of Ghosts”.

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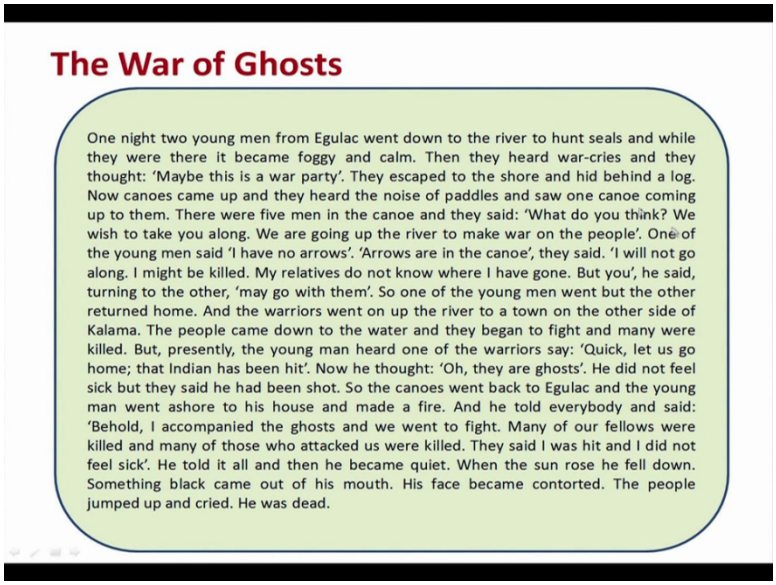

So the War of ghosts goes like this, it is a huge it is a long story about to men who are in the woods and who goes to the war. I will not go through this story you can see it later on, on the PPT and on reproduction when it moved from one individual to the other and on reproduction it was seen that the story had become shorter and it had become more conventional so the additional parts were actually removed and this by the way this story is a North American folk tale, but it was actually the experiment was carried out with English people.

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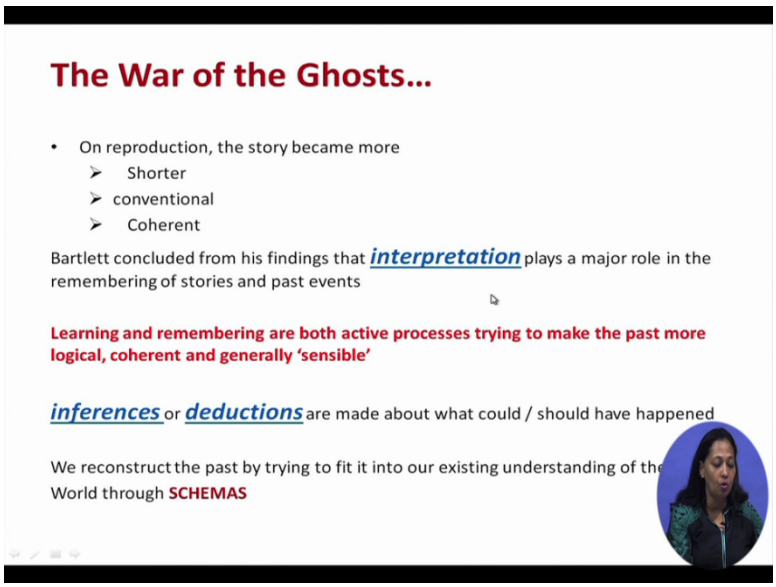

So they were not familiar with the story and so what they did was, they shortened the form of it, remembered the primary points and specially the conventional points and that made the story more coherent, so it was in put in simple terms and Bartlett concluded from his findings

that the interpretation plays a major role in remembering of stories and past events. So it is not the story per se that is remembered as per every word so or I should say that the words of the story are not remembered but the story the context of the story that was being reproduced.

So the content or specific content of the story was not being reproduced but the context. So learning and remembering are both active processes, trying to make the past more logical, coherent and generally sensible. So that is why the individuals were trimming down the additional portion the clichés the other extra non-coherent part were being trimmed downs and it was made being made into short and precise.

The inferences or deductions are generally made about what could and what should have happened. So what we do is we deconstruct the past by trying to fit it into our existing understanding of the world through our schemas, so our schemas is our basic ways of a basic patterns of seeing the world and we try and fit while reconstructing the past, we try and fit it with our existing schemas of things and this was actually studied again by Allport and what Allport did was he showed a picture of a black man dressed in good clothes and a white man dressed in tattered clothes with a knife in hand they were standing next to each other in on a train.

There were other people in the train and this photograph was shown for few seconds to several individuals and later on it was seen that the gradually the image was reconstructed as, when people reported what they saw it changed, the knife shifted from the hand of the white man to the black man and black man was supposedly wearing tattered clothes as compared to the white man, so white man was well-dressed. So now this study when it was conduct with white man as you can as you can well understand because the idea this was conducted way back in the early 20th century and as you can understand at that point in time black men were associated with violence and poverty and so it was more that he would be the one holding the knife and who would be wearing the tattered clothes.

So what are the individuals doing in this cases, are they trying to lie and are they trying to just impose, no on the other hand they are reconstructing their memory, they are reconstructing the events of the imagery that they has seen as per their schema as their pattern of things and they would fit it to the reconstruction will fit with their schema and that is how they would remember the associations.

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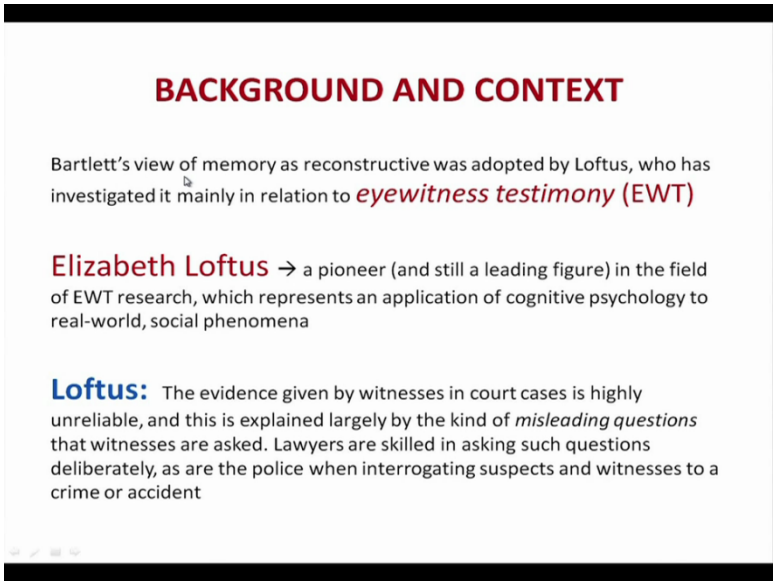

So Bartlett and of course Aristotle theory Allport experiment both had an influence on Loftus and she invented the eye witness testimony. So Loftus was a pioneer and still in the field of eyewitness testimony research and which represents an application of cognitive psychology in the real-world social phenomena. So the evidence given by witnesses in both cases is highly unreliable as per Loftus and she said that this is explained largely by the kind of misleading questions that witnesses are asked.

So the lawyers are skilled in asking such questions deliberately, as are the police when interrogating suspects and witnesses to a crime or accident. So Loftus shows that when an individual is given a cue then the memory also reconstructs an event as per that you cue. You know one very important whenever I am talking about eyewitness testimony or when I am teaching about Loftus's study one very famous film that comes to my mind is 12 angry men and this was a film made in 1957, which talks about a jury who decides on the faith of a young man who has been convicted of murdering his father.

So I think you should see this movie and you will see how eyewitness testimony can falter and how you know what are the what could be influences on an individual to give a wrong testimony, it is not always that a false testimony so it is not that the person is trying to lie. So you could probably watch this movie 12 angry men it is really interesting and very relevant for this study.

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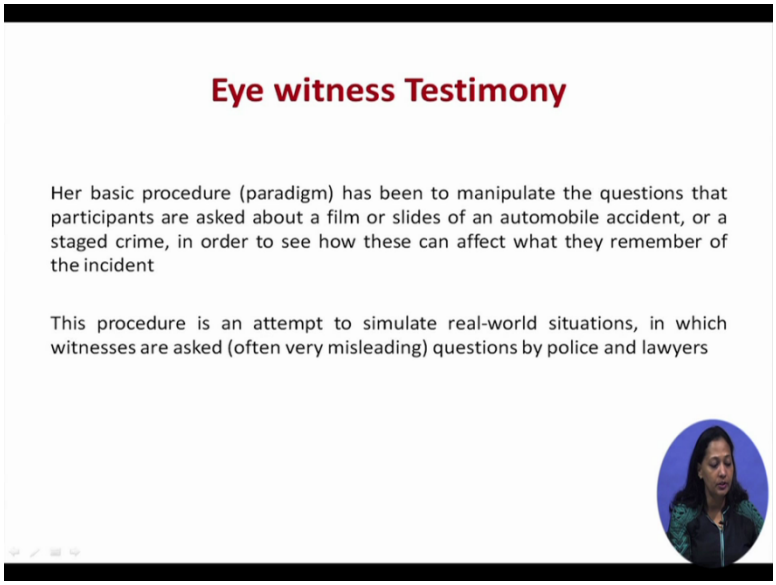

So Loftus's basic procedure or paradigms has been to manipulate the questions that the participants are asked about a film or slides of an automobile accident or a stage crime, in order to see how these can affect what they remember of the incident. So what Loftus was trying to do here was trying to play the lawyer or the policeman and provide a cue that was actually not present and see that how the witnesses would respond to it.

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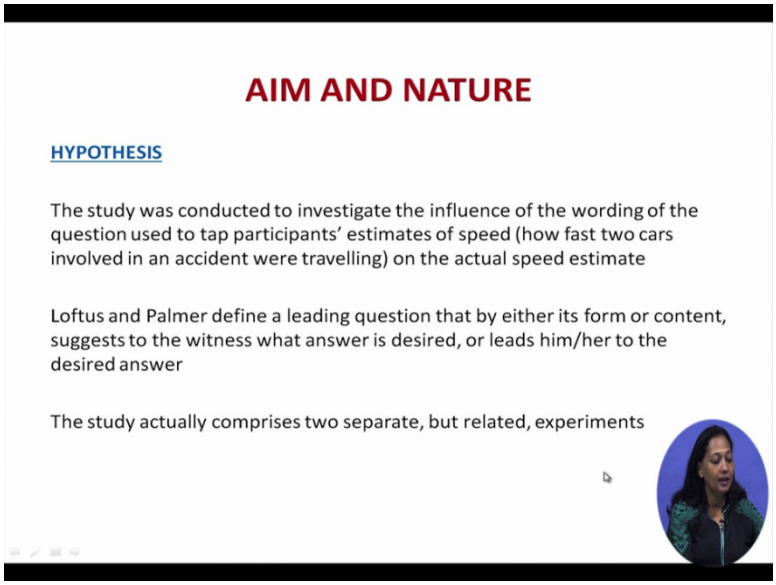

So this procedure is an attempt to stimulate real-world situation in which witnesses are asked often very misleading questions by police and lawyers. So the hypothesis was that to investigate the influence of the wording of the question used to tap participant's estimate of speed, so how fast two cars are involved in an accident while travelling and on the actual

speed estimate. So Loftus and Palmer defined a leading question that either its form or content suggest to the witness what answer is desired or leads him or her to the desired answer. So that is providing a cue without directly telling that individual about the cue. So let us see what the experiments were like.

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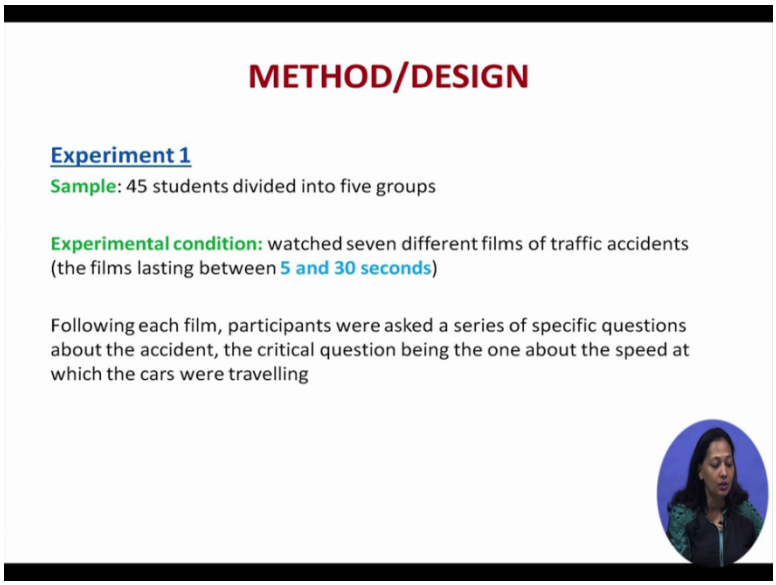

So in experiment 1, 45 students were divided into 5 groups, so that would be 9 students in each group and the experiment condition was that they watched 7 different film of traffic accident between 5 and 30 seconds each and following each film the participants were asked a series of specific questions about the accident and the critical question being the one about the speed at which the cars were travelling.

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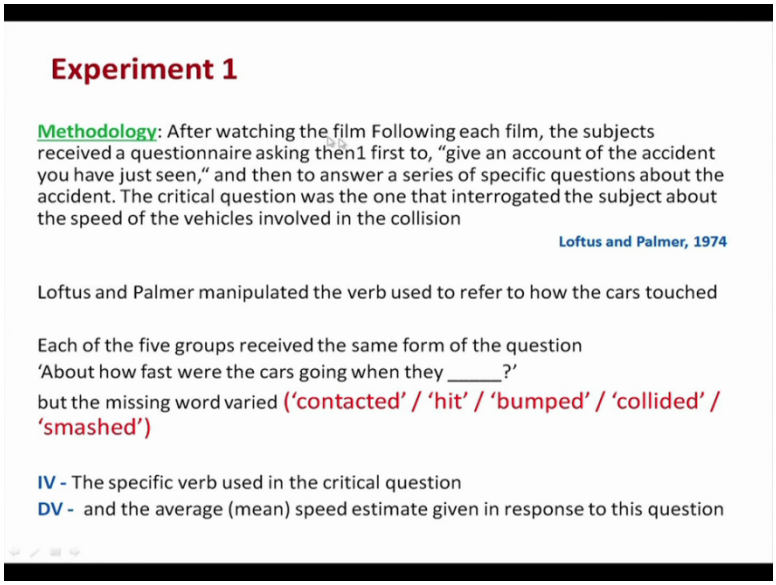

So what methodology was followed was, that after watching the film the subject received a questionnaire asking them first to give an account of the accident you have just seen and then to answer a series of specific questions and what did that have, Loftus and Palmer manipulated the verb used to refer to how the car touched, so some of the questions as you know as the Loftus stated so would be just the manipulation of the verb, so it goes like this that, about how fast were the cars going when they… So to one group it was when they hit, when they contacted, when they bumped, collided or smashed, so the 5 groups got 5 different verbs and what would you think would be the response.

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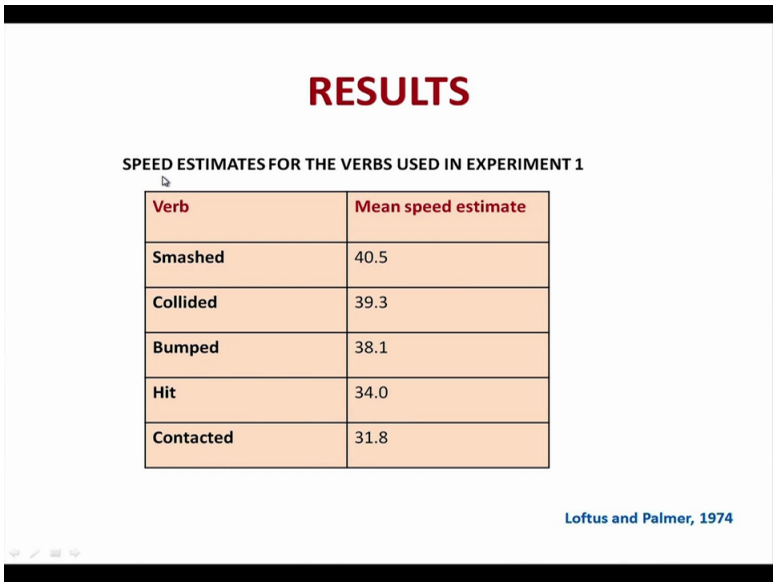

It is a very interesting response, wait let me see. So they were asked about the speed estimates, so people who got the question that how fast was the car, let us get back to this, how fast were the cars going when they smashed? We will see that the mean speed estimate was 40.5 when the verb was, “how far were they was the speed how fast was a speed when they collided” it was 39, bumped would be 38.1, hit 34 and contacted 31.

So what do you think actually is influencing the estimated speed or the response of the speed of I mean you know as given by the individual by the participant or the subjects. It is basically based on the cue word that the experiment was providing and the cue word being smashed or hit or bumped or collided or contacted. So just by that word they would estimate they would reconstruct the image reconstruct that incident as they had seen earlier on the video and like just based on the cue word they would estimate the speed and say, so as you can see that just based on one word the whole imagery is reconstrued.

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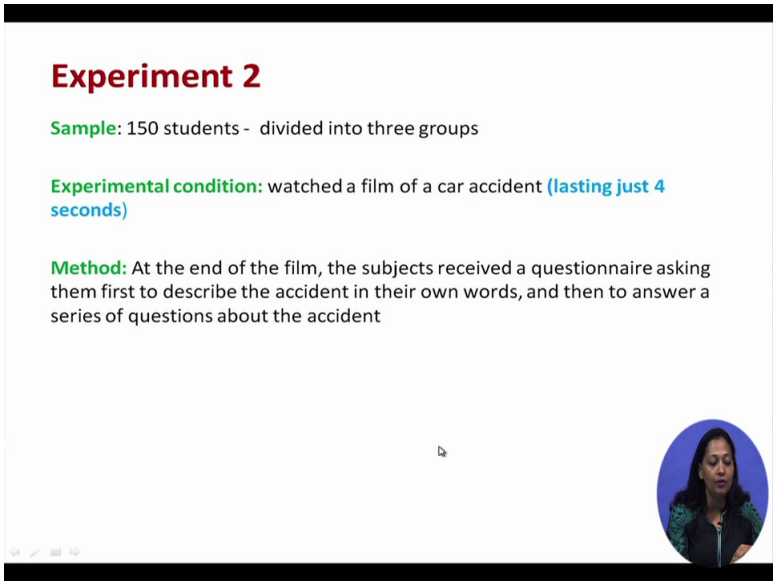

Now in experiment 2 what Loftus did was she took 150 students and divided them into 3 groups and they watched a film of a car accident lasting just 4 seconds, so earlier it was between 5 and 30 seconds and here it was just 4 seconds and they were shown just one film. So at the end of each film, the subjects received a questionnaire asking them to describe the accident in the own words and then to answer a series of questions about the accident.

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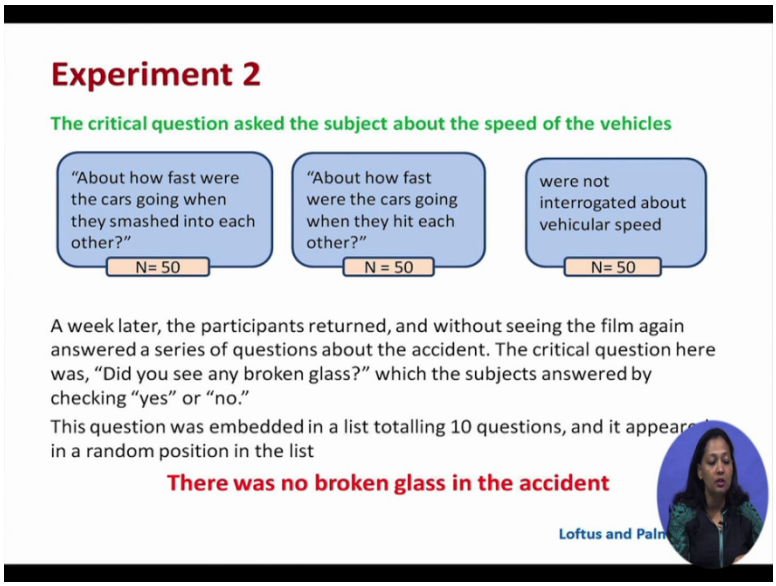

And what was the question asked here, the subject about the speed of the vehicles again, about how fast were the cars going when they smashed into each other? The next was again when they hit and the 3rd group this is the control group, where they were not told anything about the speed, so they were not asked anything about the speed. So there are 2 groups who

were asked one was smashed the other was so the question was “how fast were the cars going when they when they smashed again each other” and the 2nd one was “when they were hit against each other” and there was a control group who are not asked.

A week later, the participant had to come back and without seeing the film again they were asked another question, “Did you see any broken glass?” And they were supposed to answer by a yes or no. So this question was embedded in a list totalling of 10 questions, so there were several other questions and this was one of the questions and the question appeared randomly. So to rule out the serial position of the question, it was appearing randomly in questionnaire with other 9 questions and strangely you know can you guess what the answers would be?

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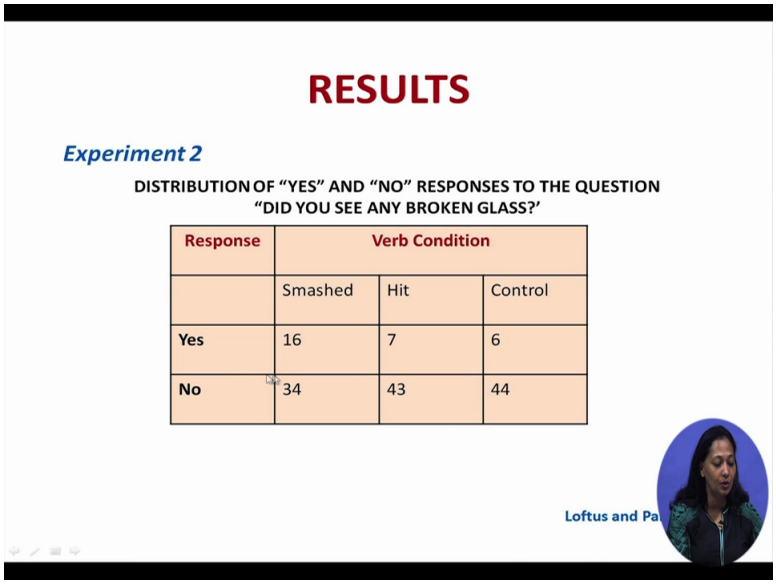

Incidentally there was no broken glass in the real incident, the video that you have seen one week earlier there was no broken glass, but when the results were seen the individuals who had first being asked the week before who had been asked that what was the speed when they smashed, those individuals responded as seeing broken glass so 16 had seen the 34 had not seen it and for the hit condition there were 7 and for the control condition there were 6 and the more interesting thing is the probability of saying yes.

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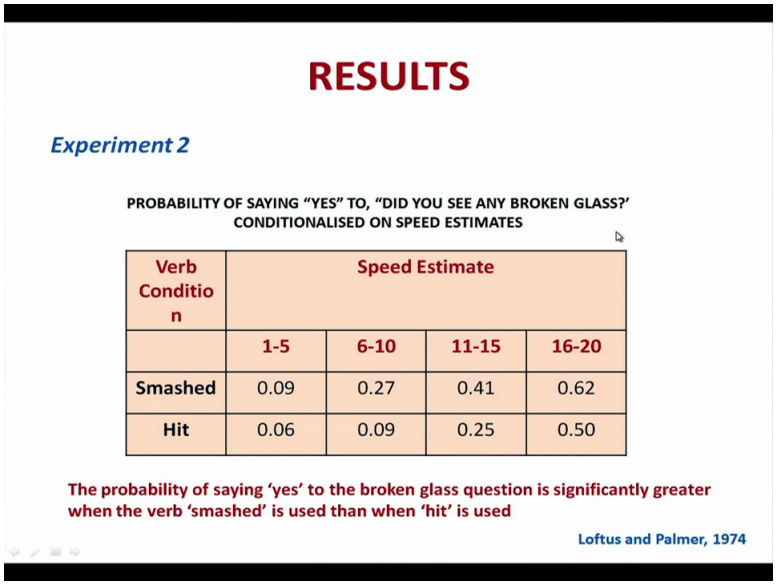

So the probability of saying yes to the broken glass question was significantly greater when the verb smashed was used with the group for whom the verb smashed was used 1 week ago and as compared to the group where hit was used. So individuals who had again you know both these experiments shown that individuals who had this idea that with the cue word that one car had smashed against the other, then the probability of them that group reporting that there was broken glass you know obviously went with the imagery of two cars crashing against each other or smashing against each other.

So they reconstructed the event by saying that yes there was broken glass so most of them saw it as compared to the group where they said it was the hit against each other. And as you will see from the results that you know a very small number of people from the controlled group thought they had seen broken glass, most of them did not see any broken glass because they were not given any cue about whether the accident was a smashed or a hit so as in whether about the intensity of the impact so how grievous was the impact.

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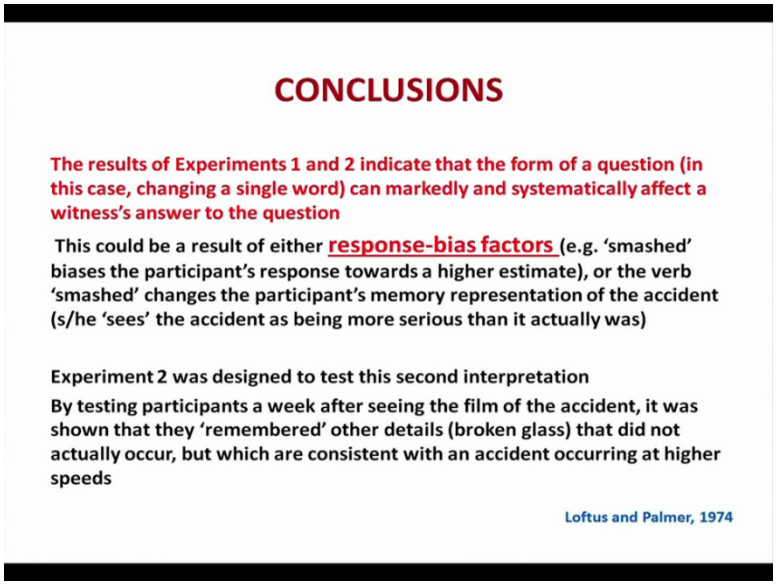

Now what were the conclusions drawn from this these experiments. The results of experiment 1 and 2 indicate that the form of a question, how you were actually asking the question can markedly and systematically affect a witness's answer to the question. So this could be the result of either the response bias factors, so as we decided on which one was more grievous or which one is more intense; the word smashed or hit and that changes the participant's memory representation of the accident, the way he or she is seeing the seriousness of the accident.

And experiment 2 was designed to test this 2nd interpretation so that is whether they saw it as more serious and when they saw it as more serious, they would obviously see broken glass also because that would also be a result of the impact and it showed actually that is how it was and several individuals remembered other details broken glass that did not actually occurred, but which were consistent with the accident occurring with any accident occurring at high speed.

So think about this that when an individual is asked a question about something that has happened earlier so we in the previous class we saw that by Ebbinghaus that we forget generally a large part of it immediately within the 1st 20 minutes. So how can an individual's memory be trusted after days in when he has to reproduce that event in front of the law abiders. So generally what happens is the part that is actually forgotten is reconstructed and reconstructed as per our own schema and we fit in things so we compensate.

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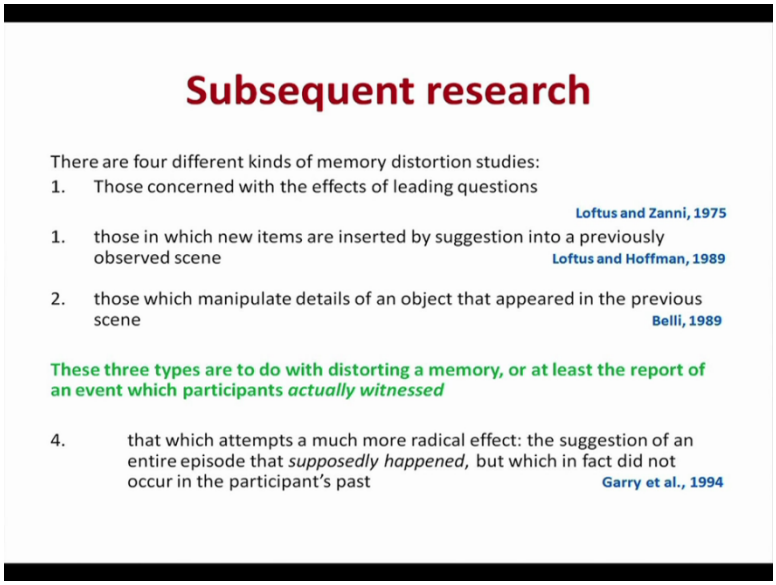

So here several subsequent researches followed following you know Loftus and Palmer research and it was seen that there are 4 different kinds of memory distortions, so one that that was concerned with the effect of the leading questions that is one we saw and the other is those in which new items are inserted by suggestions into our previously observed scene. So again you know the idea of a broken glass, several other experiments were conducted relating to this and those which manipulate details of an object that appeared in the previous scene. So there were various studies relating to changing the type of object or changing the presence of an object that appeared in a scene and along with this these 3 types are to do with distorting a memory or at least the report of an event which participant actually witnessed.

So there was some event and that was remembered with compensations so may be a part of it was misconstrued, part of it was compensated on, so there were some other new information added or subtracted. But another form of memory distortion studies was taken upon that began with this Loftus Palmer research was the false memories. So where it was seen Garry et al. studied it in 1994 and he showed that there are events that are remembered supposedly that has supposedly happen, which actually did not happen in happened in the participant's past. So do you believe in this?

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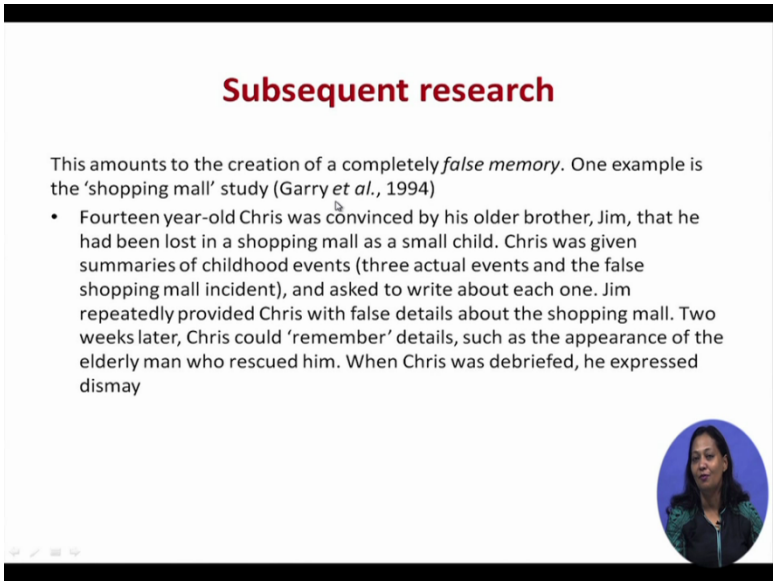

I will just relate a study of a false memory which Garry et al. in 1994 stated. So 14 years old Chris was convinced by his older brother Jim that he has been lost in a shopping mall as a small child. Chris was given summaries of childhood events 3 actual events and the false shopping mall incident and asked to write about each one. Jim repeatedly provided Chris that is the younger brother with false details about the shopping mall.

2 weeks later Chris could remember the details such as the appearance of the elderly man who rescued him and when Chris was debriefed that is told about the experiment later he was utterly dismayed. So he had started believing this you know in real life also you will get to see this very frequently you know if you start telling yourself something which actually has not happened and if you start believing in it, you know if you keep telling yourself several times, then many times you start believing in it.

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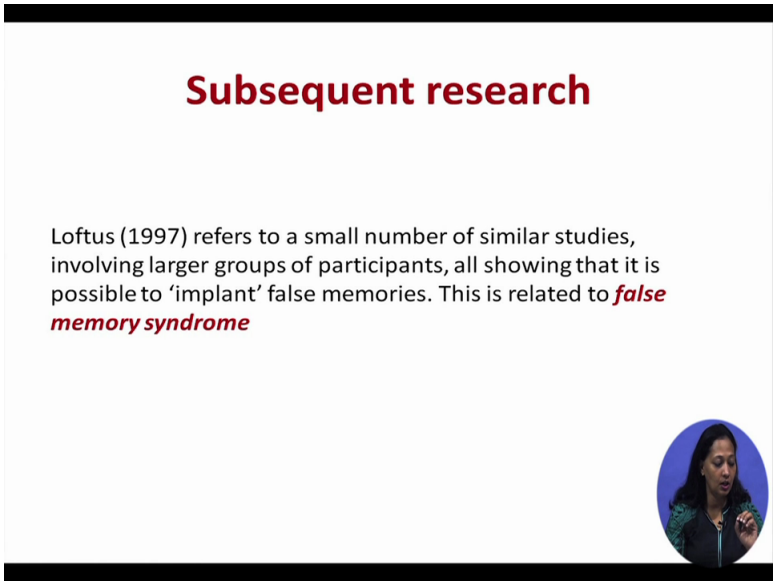

So you know sometimes starts like this you might have come across people who say like you know I have a feeling that he is going to be very insulting to me and then with time the movement it such happens that the individual starts believing that this the other individual was had actually insulted him and there has been several studies relating to this which have shown the false memory syndrome and Loftus refers to a small number of studies involving large group of participant all showing that it is possible to implant false memories.

And this has this false memory's research has also influenced the way rumours are spread and specially in in a point of crisis, at a point of crisis, socials crisis and during a natural calamity, several false memories are reconstructed in this way and remembered in this way and recalled this way. So a large number of memory studies started with Loftus's study in 1975. So again we will end this research this discussion today's discussion with in Loftus's own words.

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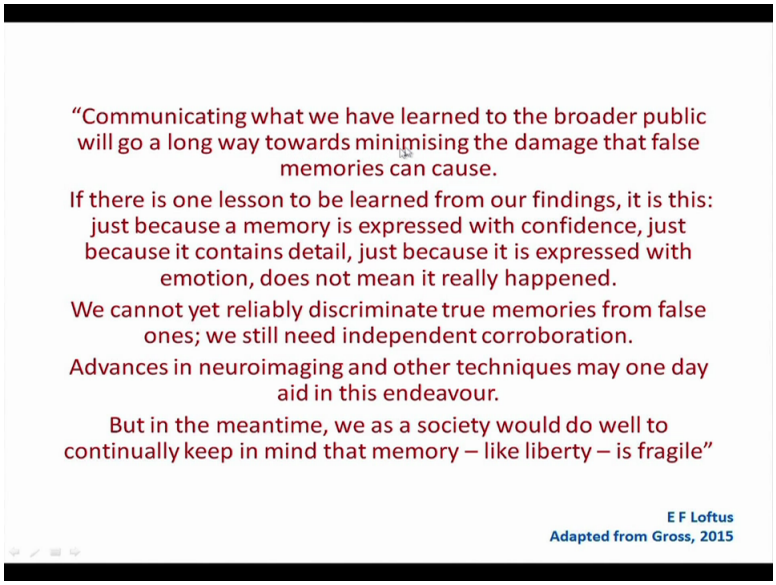

So communicating what we have learned to the broader public will go a long way towards minimising the damage that false memories can cause. If there is one lesson to be learned from our findings, it is this: just because a memory is expressed with confidence, just because it contains details, just because it is expressed with emotion, does not mean it really happened. We cannot yet reliably discriminate true memories from false once, we still need independent corroboration. Advances in neuroimaging and other techniques may one day aid in this endeavour. But in the meantime, we as a society would do well to continually keep in mind that memory - like liberty -is fragile. Thank you.