Memory
Prof. Manish Kumar Asthana
Department of Psychology
Indian Institute of Technology Roorkee

Lecture - 35
Eyewitness Testimony

Hello, I welcome you all to the lecture series on memory. Today, we are going to start a new topic: eyewitness testimony. Eyewitness testimony is an important aspect of memory because the eyewitness is a person who observes the incident and provides a firsthand description of what happened. Now, in the case of memory, this eyewitness testimony involves a person being called to the judiciary or a police station to provide firsthand information. As a witness, a person who has observed the incident provides details. However, it has been observed that as time passes, their information changes.

In the courtroom, when the prosecutor questions the witness, the misinformation provided to the witness also alters their description. This works on a very simple phenomenon, as we have discussed earlier: memory has a three-stage process. Encoding, retention, storage, and retrieval. So, during encoding or acquisition, whatever the witness observed at the time of the incident, the person must store it.

And at the time of retrieval, they must provide the information. But if misinformation or bias is present, then the eyewitness testimony changes. So, as you can see in a cartoon, a spectator of a dramatic event or a crime scene is present. People are fighting with each other, a quarrel is happening, and this brawl gets uglier and uglier. The confusion arises here: there are four people fighting with each other.

And who will be the witness for such an incident? Each one of them will have their own story. So when the police are called and they are asked to provide the description details, it may alter. Now, even though you may know any of these individuals involved in this quarrel or brawl, you become an eyewitness to the event along with the others gathered around. So there are two witnesses: one who is witnessing this event and one who has been part of this incident.

So the culprit themselves can provide information, but the people around them who are witnessing it will be asked to provide the information. Now, it may happen that the information provided by the people surrounding the scuffle or looking at this, they provide information which may resemble or fit with the details or description provided by

one of these culprits. The important aspect in this regard is a classical case study which came in 1984. Such a study was documented and reported by Elizabeth Loftus.

One of the lead researchers working in the area of eyewitness testimony and false memory. How do people come up with these false memories? The memory which a person has retrieved, a person who has acquired and retained it, and then retrieval occurs. Is it true? Is it valid?

Or is it a false? Elizabeth Loftus' work has provided a lot of insight in this area and domain, though from time to time her work has also been criticized. Now, this Suros case is a study on eyewitness testimony. In 1984, a man broke the house and then he raped the two women. One of these two women and the house, they were not only being raped, but also the burglary happened.

The person stole the objects. Now one of these two women, 23 year old woman named Jennifer Thompson identified the man and she identified the man as Ronald Cotton as you can see on your left hand screen. Now the Cotton and Poole, Poole was the actual culprit but the Cotton was also being called by the police for the identification. Now when such identification, when this recognition happens, the person is being, the victim is being on the other side of the blind curtain or one-sided glass where a victim can see the culprits or the people, the suspects, but the suspect cannot see the victim.

So on the other side of the glass, curtain was there along with many other suspects and And Jennifer identified the man that Cotton was the one who not only raped them but also did the burglary. So Cotton was charged with two counts of rape and the burglary and was sent to the prison. Though Cotton had a strong alibi. Though Cotton had a strong alibi.

witness supporting that Cotton was not present at the scene of incident. He was with that person. But still, the jury, the juror, everybody felt that Jennifer is correct and gave the sentence of life imprisonment to Cotton. Now Cotton, after 9 years, he learned about DNA testing. while being in a prison he reported to the police and requested the judiciary that it should be tested DNA sample should be collected and then the case should be reopened

the case was reopened DNA testing was done and he was found innocent then only the another suspect came into light that was Poole as you see the cotton and Poole The facial similarity may have made Jennifer to identify Cotton as a suspect rather than Poole. Now

the type of incident when people is being traumatized the detailing of the information may become blurry. People may not retrieve all information when they are being traumatized. So this case after 9 years when Cotton was being released

We understood that eyewitness identification is neither always reliable nor accurate. And since then, there has been a drive to identify such innocent people who are in prison because of eyewitness testimony. Now why such or why such misinformation or why such misconception or why such misunderstanding happens altogether by the eyewitness. That is what is of a prime concern.

And that is what we are going to discuss and learn in this lecture. That how the innocent person like Cotton being given a sentence of life imprisonment And he got only feed because of the DNA testing. If he would not have learned about the DNA testing, he would still have been in the prison and serving his sentence. And no one is going to give him back his 10 years of prison.

So that is a prime concern for us to understand how this eyewitness testimony alters, modified, get affected by various parameters and factors. And what are the estimator values? What are the system variables? What are the estimator values?

How do we estimate that the eyewitness estimate is correct? How do system ensures that the eyewitness estimate is correct? Because it has been a very dicey and slippery road. Now where is eyewitness? While examining this scenario, as you can see on the cartoon itself, number three, please step forward, rip open the bag of garbage and throw it around.

Now, all of them, all of the suspects look alike. And this is exactly what happens in the case of Cotton and Poole. Some similarity which made Jennifer to identify that. Okay, so examining the truth regarding the crime and handling out penalty, eyewitness account of testimony has a strong impact on the criminal investigation and courtroom verdicts.

The entire courtroom verdict, mostly the case, is dependent on the eyewitness testimony. Though from time to time, researchers have recommended that there should be an additional measure, parameter, variable should be there other than the eyewitness testimony. But till date, Eyewitness testimony holds a strong ground. So, eyewitness assessment of eyewitness.

Eyewitness accounts are crucial during a case, trial and is subject to all sorts of human errors. Now, in the case of case study which we discussed earlier, the victim is the eyewitness. Along with witness, if there are many other witnesses are available or

present, then it will be the subject of consideration. But what we have seen, there are lot of human errors happen.

Thus, the assessment of eyewitnesses and their statements has become an entire body of research. How crucial and how valid the statement of the eyewitness is, and how reliable it could be. For the case or during the criminal investigation. In some cases, the eyewitness testimony may not have an important role in a person's life. But in some cases, it could be harsh and very, very destructive.

And that is why such statement assessment is very crucial. Some approaches have been used to study eyewitness testimony to ensure reliability and accuracy. How is it done? First point: information related to the actions. What action has been performed?

And not only the action but the words of selection and the characteristics of the perpetrator. The person who is the culprit—his characteristics, his traits, his nature, his natural tendency of behavior—are subject to consideration. If a person has a history of crime, then the reliability of this information plays a crucial role in the eyewitness testimony. His or her actions

These are our words. The details of the context and the roles played by other people. In what context the scenario happened. As I showed you earlier, the example where four people were fighting with each other, brawling. That context and the roles they are playing play a crucial role.

Are they fighting among each other because of the incentive? Are they fighting with each other because somebody said something personal? Are they fighting with each other because somebody got a promotion over the others or somebody just said something wrong? So the context—what is the context behind it? This is an important aspect in eyewitness testimony.

The juror, the jury, is provided with that context and even the roles played by the victim or the culprit in that context when the incident happened. An eyewitness account to an investigator has to keep questioning the reliability and accuracy. It is an important element here—the investigator who is investigating the scenario, who is investigating the context, who is investigating the roles played by the victim and the culprit. He has to investigate in detail and keep on questioning.

Is the source of information, is the action, word, reliable and accurate? Till he is sure enough, till he ensures that everything is okay, can be relied upon. He should not report it. Another aspect is victim as a witness. Can we use victim as a witness?

As we saw the case study, Jennifer, she was the victim. And can we use her as a witness? In some cases, witness may also be a victim as we discussed. So can we use her? Can we use them?

Investigators have to be appropriately inclined to investigate. Investigators doesn't have to believe just on the testimony of the victim. That whatever the witness, the testimony a victim is providing is accurate. And they don't have to be inclined or biased towards that. They have to investigate.

As a victim, the demands of the perpetrator and the degree of threat levelled at them increases. What we have seen in many instances that the culprit and the threat which these culprits provide or give to the victim has increased or increases after the incident. They ensure that the victim should not come forward and become a witness. Because we are the prime victim. We are the prime witness.

Though we have certain cases in which the person is being wrongfully convicted. As we saw in the previous case study. But in some cases where the culprit has done a crime, he or she ensures that the witness should not come forward. And so they threaten them. And when they give them a threat, then it increases.

The level of arousal and distress experienced by the witness and the victims of the crime increases. Because the time when the incident happened, they acquired the fear, they acquired the threat, which they stored it, retention happened. And in the courtroom, when they are retrieving it, then that is bringing back the fear. And when the fear is coming back, the increase in arousal level, which releases different stress hormones, anticipation of threat,

Also, experience of the incident starts to emerge. So, the question is, using victim as a witness, their arousal level, stress increases. Then they have to be there as a witness. Now, many instances, people have even discussed, imagine a scenario where a child has been a victim or a child has witnessed the crime. Can we use them?

The question is, it's a very controversial issue. Why is it a controversial issue? A child who is acquiring information, who is storing information and doing the retrieval just like

an elderly. But the point is that we do not do a linear processing. We do not store information, one information at a time or one word at a time.

We are bombarded with huge amount of information. As we discussed earlier, in working memory, lot of information we are bombarded with. Auditory memory, visual memory, both are coming along with many other types of memory. Buffer is there, trying to filter out. Once the memory has been selected, once the information has been selected, it goes out to a central executive system, which ensures the binding of information.

So a child who is so young and bombarded with thousands and thousands of stimuli, acquiring that information, encoding that information becomes very challenging for this young individual. As you age, your system, your trace consolidation becomes more and more controlled and robust. While a young individual, the trace consolidation is very transient phase. More and more times of rehearsal, retrieval is required. Their testimony seems to be less accurate and more suggestible in recalling memories.

They give a suggestion. While providing the information, while they are retrieving the information, it seems that it is getting less and less accurate. Young witnesses have been found lacking the ability to accurately perceive this scenario, the context, what has actually happened at the time of incident. They lack that information. They lack that ability to accurately, precisely provide the information what has actually happened.

Now the kids, the children are very young. So their consolidation of information is dependent on many other parameters. Many questions related to the issues like age limit of the witness has been of a prime concern. What should be the age of the witness? Can a 5 year old witness be considered into a court room?

Can a 10 year old kid can be considered into a court room? 12 year, 13 year, 14 year, 15 year, 16 year, 17 years or 18 year and above should be considered. And that is why we have we consider the witness major and minor. If you are 18 years plus or 18 years and above, you can be considered as a witness. But below 18 years, it's still doubtful.

The kind of questions we can ask to the child witness in the courtroom to ensure the ethical and moral implications. Reliability of child's account as compared to an adult's Can we compare these two statements, testimony, one testimony from child, one testimony from elderly and batch them? In some instances, the jury, the juror has given a verdict in favor of the children and also has given a verdict based on the information

provided by the or collected from the children because that is so much in detail and descriptive and reliable.

So this is very crucial to the investigator to understand and then propose children as a witness. What we have seen in recent years in the courtroom that there are different methodological differences are there. As a result, the eyewitness testimony also alters. As previously we discussed about the different types of eyewitness testimony, different types Measures, what we see here, different methodological differences are there.

Real-world observations, independent knowledge of events to compare, witness recall is absent or limited. How much information is the person retrieving, or is it absent? The presence of numerous extraneous variables is there. That makes it difficult for the investigators. So in real-world observations, investigators face a lot of challenges.

The first challenge he faces is the knowledge of the witness itself. Is the witness knowledgeable enough about the context, about the incident? Is he or she aware of the incident? How much information can they provide, or are they limited? If the information is limited, then the investigator has to look for other sources.

Even then, if the investigator gathers a lot of information about the incident—whether in favor of the witness or against the victim or the culprit—he must also rule out indirect variables. There are a number of variables. They have to identify them and then rule them out. The variables that cannot be helpful to the person. And then they also have to simulate the criminal acts.

Simulation of criminal acts. Presenting the simulated events to the witness using staged or video tape. So that they can recall what exactly happened. Did the witness, did the witness have witnessed the event similarly, or have they witnessed something else?

This and the information are provided to the investigator. So they stage it to provide an aid, to provide support to the witness for better recall. And when such simulation is happening, a scientific control is there. The witness is experiencing or revisiting the scenario in a very controlled environment. Giving an invaluable control over the variables relevant to the scenario.

They do not provide control to the witness. But the simulation helps the individual to recall better. If, in a similar way, the incident has happened. Now, while talking about this, it is an important aspect that such a simulation, when we are talking about

eyewitness testimony, what is important for us? What is important for us is how we are, how memory works in eyewitnesses.

How we are doing the acquisition, how we are doing the retention, how we are doing the retrieval. So eyewitness testimony viewed through a signal detection theory. Are we able to detect the signals? The signal, the features which Jennifer failed to detect as a result Cotton went into the prison for 10 years. So the important part here is that the witness correctly detect the suspect.

If the victim but the witness detects the suspect. Then it is a hit. Then it is correct. As you can see on your screen, suspect 1, suspect 2, 3, 4, 5 and 6. Signal detection theory says that match with them.

Match it. What somebody has to do? Recognition has to be done. The matching, the features will be matched. All these features are going to be matched with one of these individuals.

No number of matches is there, no number of it. Correctly ruling out the defense, correct rejections. The defendant cannot commit the crime but cannot be accurately identified. So in that case, there is a miss. The person has done the crime but cannot be accurately identified, so it is a miss.

And this is a human error, which we were talking about. So eyewitness testimony is full of human errors. When someone is incorrectly identified, a false alarm is there. The person is not identified. You are matching this person with this.

It is going to be a false alarm. See the hairstyle. See the eye features. So this false alarm has sparked a tremendous amount of research. And signal detection theory provides that insight to us.

What are those features? What are those signals which one is detecting? Now, as we have been talking about earlier, the case study which has been documented by Elizabeth Loftus and I told you that Elizabeth Loftus did a lot of work in the area of eyewitness testimony and false memory. Misinformation effect, she tried to do a simple empirical study

with set of subjects, participants. And what she did? Subjects were given a simple task. They had to watch a red car driving and then hitting a pedestrian. And then a leading questions were being asked.

How fast the car travelling when it passed the yield sign? Now, the correct thing The correct information, the original information which has been provided to the participants or the subjects were that how fast was the car travelling when it passed the stop sign. But Loftus changed this stop sign into yield sign at the time of retrieval. So, these stages of memory as we were talking about acquisition which is nothing but it is encoding, retention which is nothing but storage leading to retrieval.

So, when a person is learning Then they were being provided with the information how fast was the car traveling when it passed the stop sign. At the time of retention or storage, they stored it that it is a stop sign, not a yield sign. When the retrieval is done, then she changed the slide from stop sign to yield sign. And she posed a question.

to the participants and the subjects about the yield sign were likely to pick the yield sign. So participants were likely to pick up the yield sign because they assumed that a stop sign was not being provided to them, yield sign was provided to them. And this misleading information, this misleading information demonstrated that 41 percent participants, 41 percent subjects were accurate to identify that T sign was not there, stop sign was present there. But this 41 percent accuracy is indicating that approximately 59 percent participants were inaccurate. So, this 59% participants were inaccurate to identify that it is a stop sign.

This percentage of individuals suggested that it is a huge sign. So, with this study of Elizabeth Loftus, we understood that the misinformation in the leading question led to the inaccurate memory. This inaccuracy is giving us a hint about the memory biasness. The biasness which an individual, which the witness is having. Such as, when the prosecutor is asking a number of questions in the courtroom,

To the witness, then he is misleading the witness. So when we try to remember a person's name, but we cannot find it, even if we sense that it is right, it is there. Tip-of-the-tongue phenomenon. It is there on the tip of our tongue. I know this.

So this tip-of-the-tongue phenomenon, we have discussed earlier also. Many a time, a person is able to retrieve information but cannot accurately retrieve it. He acquired it, he stored it, but retrieval becomes a slightly challenging part. Hence, they need some cue. And once the cue is provided, then they retrieve the information.

But the question arises now here: is the cue provided to them misleading or correct? A memory system takes advantage of recurring patterns by forming and using schemata. So

we have a lot of memory templates. As we have been discussing earlier about the grand slam masters. When they are playing a chess game, they have n number of templates in their brain.

So they are not geniuses. They form and use different schemata for different moves. Compared to healthy controls, they have a number of estimators which they use at the time of the game. So for example, if I hear the word 'library,' we automatically remember that the library will have shelves, books, and even the books will be categorized into history, anthropology, geography, chemistry, and physics. This is our memory bias, and this is exactly how we do the categorization and

organization, which we discussed earlier—perception, the incoming sensory information, meaningful incoming sensory information—we categorize them, arrange them, and organize them. So what did we study? We studied eyewitnesses, the importance and relevance of eyewitnesses, the assessment of eyewitnesses, approaches to studying eyewitnesses, and the methodological differences one has perceived. Cognitive theory and signal detection theory have been major contributors in the discipline of cognitive theory and in eyewitness testimony investigation.

Misinformation affects empirical work—how a participant has been misled and it resulted in 41% inaccuracy. Sorry, 59% inaccuracy. And then the memory bias. How an individual experiences the tip-of-the-tongue phenomenon and then gets biased by their preconceived notions and information.

So with this, we end our session on eyewitness testimony here. In the next class, we will take this topic further and discuss it in detail. Thank you.