Introduction to Cognitive Psychology
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Lecture – 14
Retrieval from Long-Term Memory

So, welcome back to this lecture on long term memory and in the last lecture we looked at what is long term memory? How it is stored? What is it is format? And what is the forgetting that it happens? Or how does the forgetting happen for long term memory? And we looked at several forgetting theories like decay theory, the theory of improper encoding, and the interference theory and so and so forth.

Continuing from there, the last thing that we did in the last lecture was how retrieval really works and this retrieval failure how does it really process and one thing which you are saying is in terms of retrieval cue failure. So, if I improper retrieval cue is used. How does forgetting suffer? How do we make this happens? Really improve this retrieval cue and what retrieval cue works the best?

So, what is the way which you can improve this retrieval cue kind of a system? So one of the things in which can help people to learn, to remember back from long term memory is something called the encoding specificity principal. Basically cues that whatever way in whatever format you remember, in whatever way you remember if I have the same context back. In whatever context people remember; if I bring the same context back people tend to remember more.

Now think of when you are giving an exam, but you tend to remember is in which page the answer was there. What was the page like? What was drawn on top of the page? Everything comes to mind but the answer does not come to mind and. If people are tested where they learn back the chances are that the context because this context serves is additional cue.

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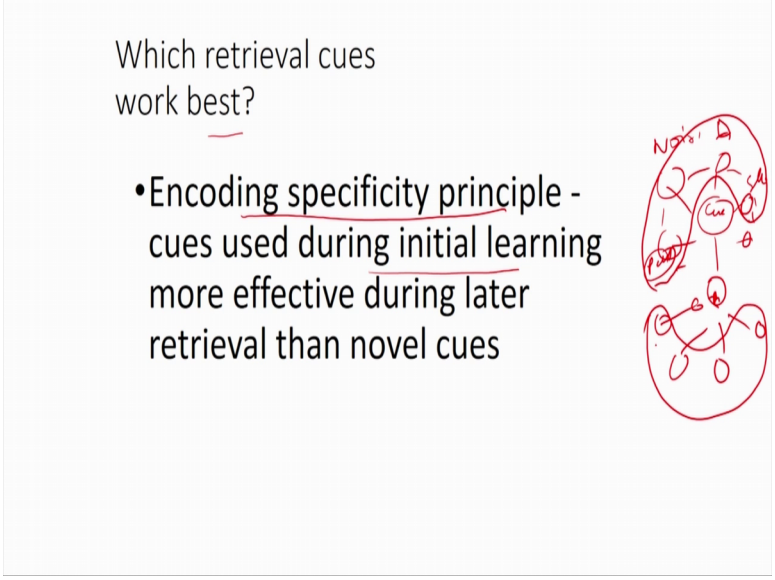

Let us see if this is the cue which is connected to my target. There are several other cues from the environment which are present when I am learning it; for example, the atmosphere which is there the kind of noise which was happening, the state that you were there in the amount of the type of people which are present when you are learning.

And when you are remembering it back all these additional cues, all these additional features will also help you in recalling back things or recalling back the answer and this is what is called the encoding principal. So, if the contexts this is what the contexts looks like. If the context is the same here; then people tend to remember back and let us look at what encoding specificity principal basically tells us.

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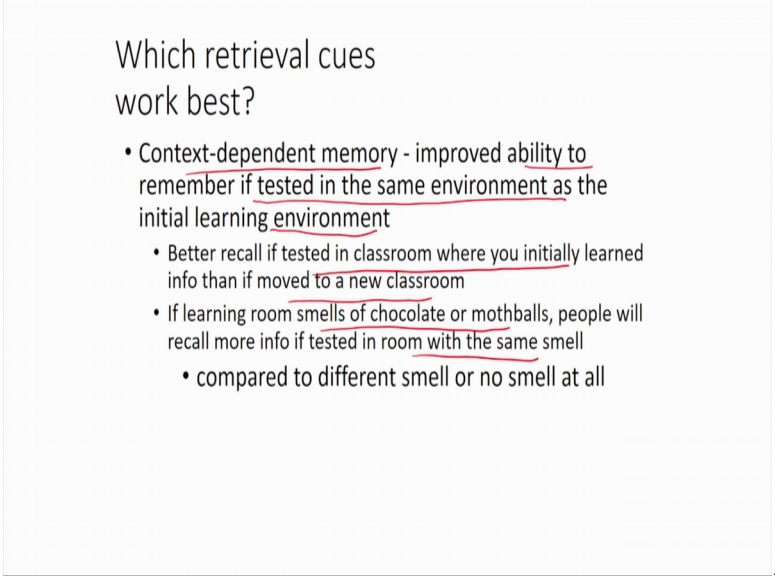

So, in encoding principal you have 2 different types. One is the context dependent memory. So, improve ability to remember if tested in the same environment as the initial learning. If people are learn in a particular environment, let us say we will learn in a library is a text you back, if I text you back in a library, it is much better; if I make you read something in a classroom and test you back onto the classroom. The other features of the classroom where you sat the kind of see that you sat in.

The kind of people that were there with you; all these will help you in more retrieval. Because, the number of retrieval cues will increase and number of retrieval cues will increase which means that the chances of recognition increases as each cue has a weight and so, the added weight will increase the efficiency of cueing. Better recall if tested in the classroom where you initially learn than even moved to a new classroom or if learning room smells of chocolate or mothballs people will better to remember if that when the chocolate smell or the chocolate mothballs smell is same. So, compare to different smell for no reason.

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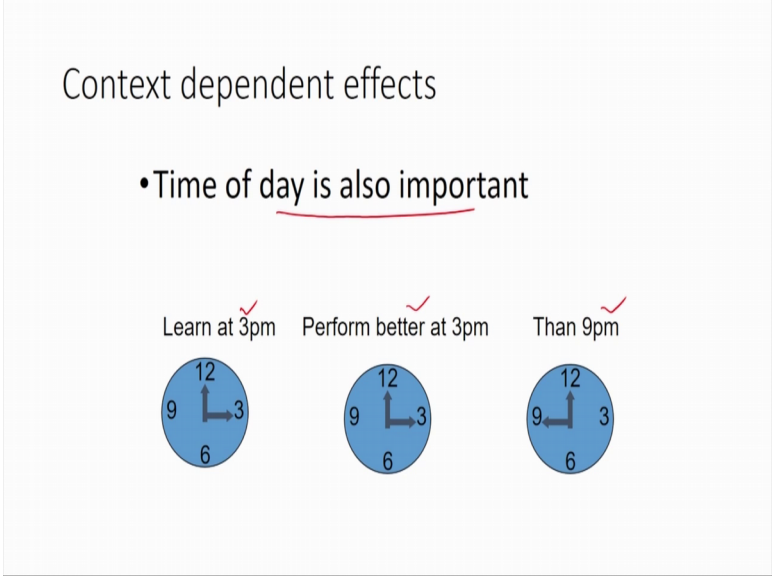

Now, another context effect that is popular in most research was in psychology and particularly the kind of research that I do is basically called time effects. So, basically I work in something calls sleep and memory and so one of the things that we have looked into is the chronological cycle. Basically, the ultra then and the chronological rhythm that people have.

People have the set rhythms that ups and downs which are there and within days, the system the human metabolism goes up and down. For example, at 2 o clock in the morning 2 to 3 there is a dip in this rhythm the chronobiological rhythm which is there. That is what we have to take care of and we are testing people or when we are doing psychological experiments; because if you learn in a high metabolic state and if you learn retrieve it back in low metabolic states you will have differences. So you have to think about that.

And this is another factor which you have to think about for time of the day is also important. Let us say that if you remember something learn at 3 pm and then it is better to perform that in 3 pm than in 9 pm. Because, 3 pm is the first not they this is the first dip that is there in your biological cycle and at 3pm the metabolic rate or the metabolic system is at a very low rate. And if learned at this metabolic rate remembering back at that metabolic rate is much better than remembering at any other metabolic rate when it is at 9 pm.

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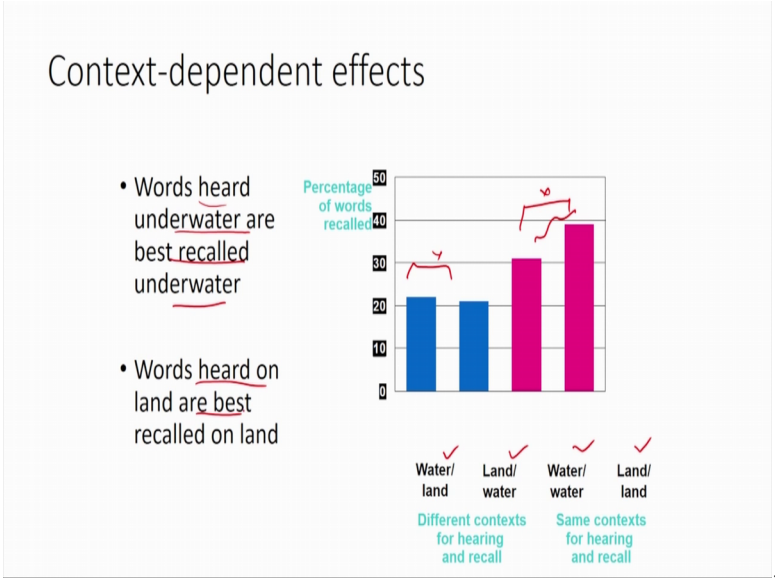

So, an experiment was done with diverse to find out whether this works or not and it diverse when to learn a particular kind of a list. Lists of word by given to people who died underwater and so, they learnt the list on land and on water and they again diverse by use. There were 2 kind of diverse, one who were sitting on the water, over the water and one under the water. And there learn less over the water under the water and later on retrieval was done. Retrieval was done both on land and underwater.

As what happened is those diverse who learn let us underwater the retrieval was better underwater and for those diverse who learn list over water on land the performance was better on land. And that is what you see water land, land water, water water, land land in both these cases the performances are better than this is always better than the performance here. Words underwater a better recalled underwater and words and for the under land or better equal under land.

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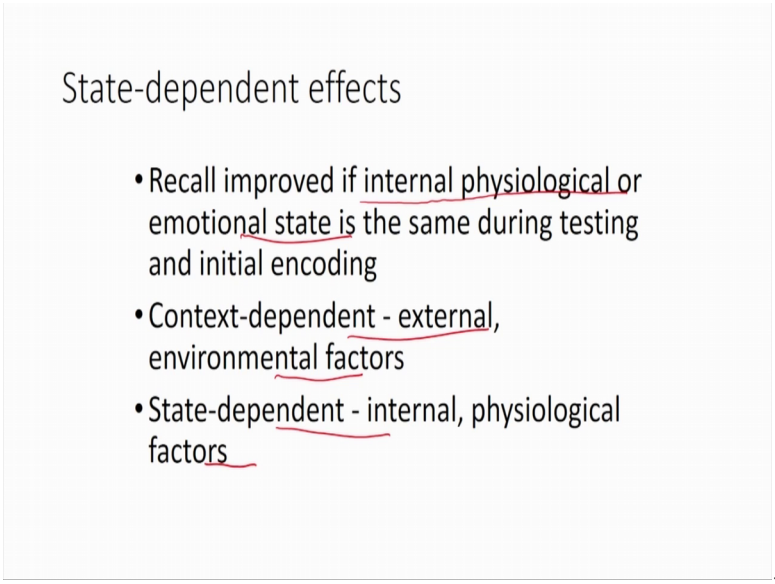

Now, with context effect you also have encoding specificity, you also have something call state dependent features. So, basically improved recall related to internal physiology or emotional state. Contact dependent effect, environmental factors and state dependent effect depends on the internal physiology. What is the body physiology when you are remembering something, when you are calling something that also has a lot to say about how recall really progresses what you are trying to achieve or what is a body physiology will actually also support your retrieval.

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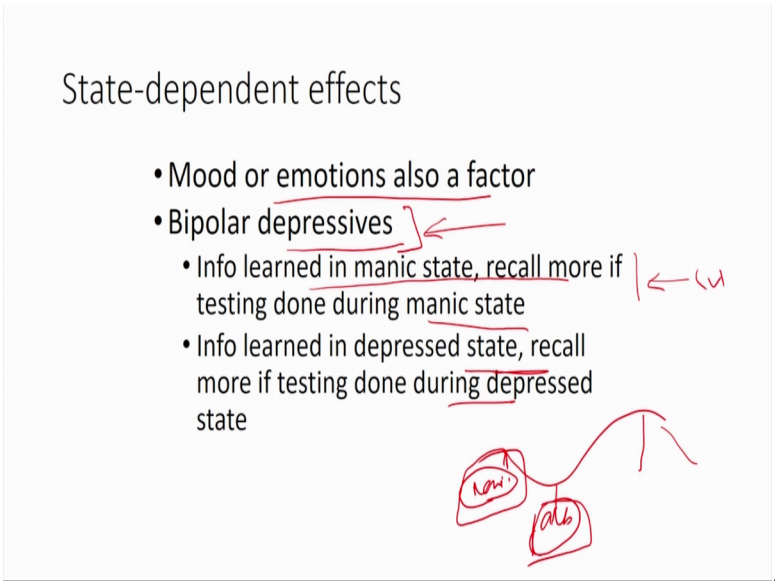

So, for example, moods or emotions have a lot to think. If you are negatively emotion or if you are feeling negative, when you are learning a list and then we are trying to retrieve back this list, at this point of time you are still feeling that negativity. This will lead you to learn better so, people who learn under certain emotionality, when they retrieve it back that happens or for people who it is better or people who learn under certain mood, it trimming it back under the same mood is better.

So, bipolar depressive's information learn and experiments was done on bipolar depressives was found out that information which people learn. These people learned in the manic state. When they try to test it under manic state, the recall was better than when tested under depressive. From it is manic depressive people go and the phases.

So, this is the kind of phase, this is called the mania phase where they are hyperactive and this is the depression phase were they are not, where they are very depressed. No kind of activity again mania and get depression, this is called bipolar disorder keep on switching between mania and depression. Once they are very excited if they learn something, when they are very excited and they try to remember this when they are depressed, does not work for recall is work.

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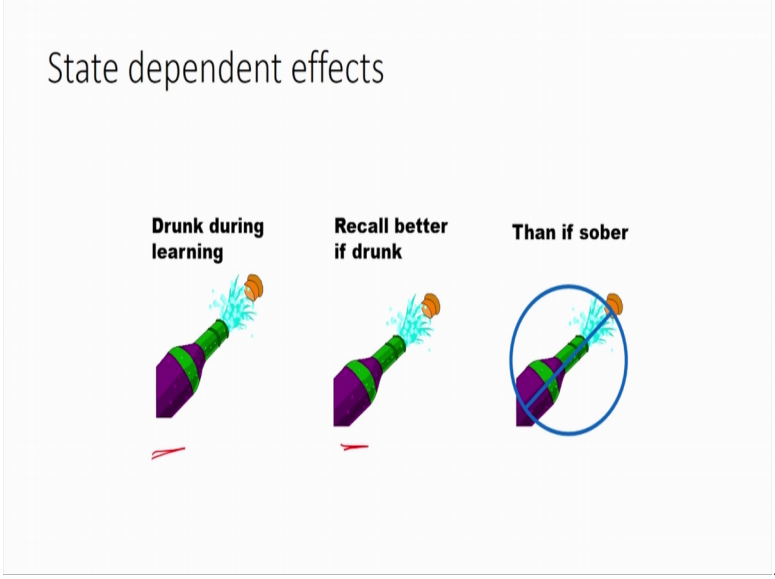

So, if you are done when you are learning something and you recall better if drunk then another so, basically would not suggest that, but then if your metabolic state is having alcohol, if you have height and alcoholic content or a metallic state is such that it is

suppose alcohol intake and if you learn something there, then recall is better when you are drunk. Then when you are sober because this is where it was encoded and this is how it should be (Refer Time: 09:03)

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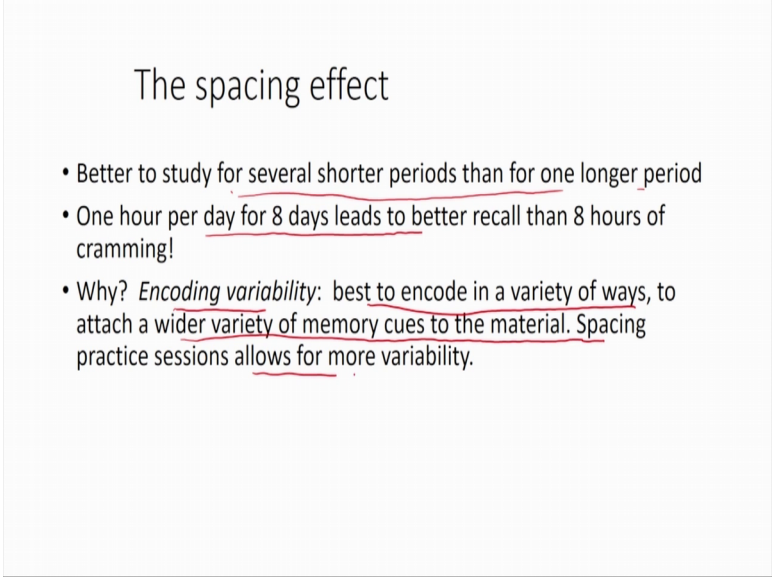

Another feature or another effect which promotes recall is called the spacing effect. What does it say? So, better to study for shorter periods of time than for one longer period of time. If there is a list of item that you have to remember or if there is a number of items that you have to remember. It is better to space it off with basically means that break it off. What you tend to do is if you all learning a lesson what you tend to do is break that lesson into several parts remember this is lessons into parts. Learn this lesson into parts, this is called the spacing effect and even was also tested, this is called the mask practice versus space practice kind of an arrangement.

In mass practice even was tried to learn the whole list in one go. So, 100 lists with 100 words each in one go and so, it was not easy to do, but what he did was when he tried to learn only one less take a break again take another list and learn. It was much better in this is called the spacing effect. In spacing effect what you tend to do is take the whole section or whole chapter which you are learning break it into smaller parts and then start learning with it and I think that is a good idea took on that is to better learn something.

So, 1 hour per day for 8 days leads to better recall than 8 hours of cramming in 1 day as this is what I see more students doing just before the exam, but they tend to do is that

they start cramming, other start losing their sleep over and. So, they going to this 4-5 hours of learning everything and then coming back and then there is a failure. Why is a failure because spacing something gives you enough time for the neurons to basically incorporate back to basically regenerate back and.

They can store more information, but then if you keep on exciting and neuron over a period of time, these neurons also have kind of and know what kind of a system. Where they do not get excited after the period of time. They show this dull state after at that point of time and so they cannot exercise after the number of excitations and that is what happens and you are not able to remember anything.

So, why because encoding variability best to encode in a variety of ways to attach a wider variety of memory cues to the material spacing practice allows you to have more availability. What will happen is that if you bring the lesson into several parts and start learning it there will be so many other cues. Because as you take breaks and you come back learning, the context the surrounding will change. As a number of sounding cues will be there, the chances are that even if you do not remember one part of information, there are several other parts you will remember.

But, if let us see in one context you are learning and if something goes wrong if you are forget something from the context, the whole information with go away. It is like learning things in small chance and when that happens as you go start learning in different different chance, the environment keeps on changing. The number of changes of the environment will give you more number of cues. More the number of cues more the chances of remembering and that is what really happen and that is what spacing effect is all about.

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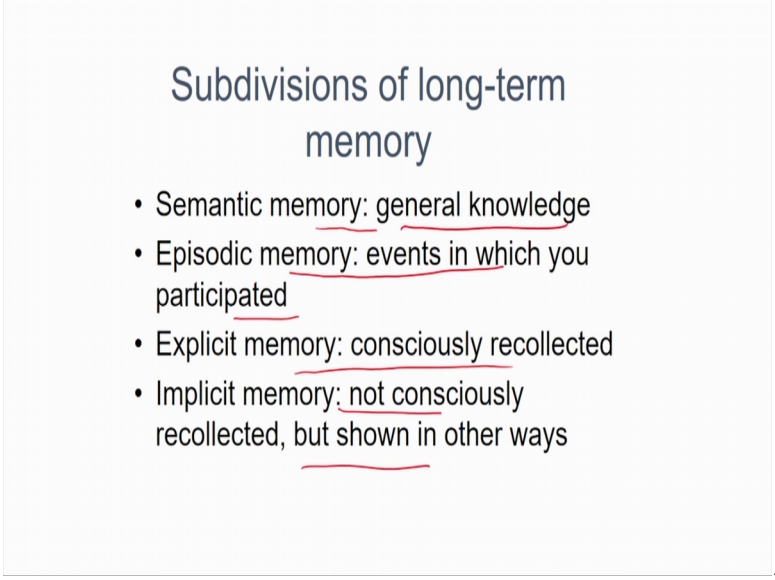

So, we have also discussing about something called the different kinds of memory and that is what I show to you. There are several sub divisions of memory as I said there are something called semantic memory which is the memory for general knowledge. It stores most information into it; it stores information like the facts, arithmetic rule.

It is stores information like how what is the meaning of bigger, what is the meaning of smaller is stores information like what is the capital of England, what is the capital of United States, who was the first US president, who was the Indian president, who is the only lady president, Prime Minister of India or things like where is America from here or what is of wheel car, what is a curve. That kind of information is general knowledge information because this is a something which we need to know and which are facts which is there. So, also information like where will the sunrise, when will the sunset in that kind of information.

Now, episodic memory those which have events or which remember events. This is things like my 12th class farewell, my first birthday party, my first fling which was there, my first day at school, my first day at college those kind of things. My first party the most amazing party in my life and all those highlight events of your memory or of your life is what this episodic memory, it is like in episode so, it is like a film.

Whereas, semantic memory is like a text, it has knowledge into it, but not even related to it. Episodic knowledge or episodic memory is like an event, it is like a film. You have all

the sounds and lights and everything into it and that is what an episodic memory will look like, but semantic memory are bare effects. It is like a newspaper. Very crude comparison is episodic memory is like television, but then the semantic memory is like a newspaper and when whether is say episodic and semantic, You do have to remember, where episodic memory has to have semantic memory into it, but semantic memory need not necessarily have a episodic events. For example, when I say what is an apple? Define an apple.

Now, when you define an apple, you do not really need to think about an apple or when you saw your first apple or your first episode with an apple. You can say that is a fluid, it is a red, green, blue in color, it is not blue in color, but then red or green in color or taste like this. There is the kind of information that you relate, but nowhere along the line do you have to think your first encounter with the apple. You do not have to think when you met your first apple or when you eat your first apple or where you learn the word apple. But in episodic memory, you have to have semantic memory embedded into it.

For example, I say your first birthday. When I say your first birthday, there is a schema there is a basic event that you think about so, what happened in your first birthday? In your first birthday you might have got a toy or you might have got a certain kind of cake for that have to know what is the cake? What does it taste like? What is the meaning of the word cake? And what is the meaning of the word toy? And what kind of toy? With movie, you have newspaper items also or facts and knowledge also, but in the newspaper you do not have these event into it. So, newspapers are static and TV is dynamic and that is the difference between what a semantic and episodic memory is.

So, basically most and then this semantic and episodic memory what are called? Explicit memory because, when you remember it, you are conscious about it, you consciously think about it. When you think about apple, you consciously searching your long term memory for what an apple is and if I ask you to differentiate between what an apple is? And what an orange is? Or what a mango is? You consciously do this task. You ask your long term memory, what is an apple? What is an orange? And what is a mango? And differentiate between it. You are conscious, you are aware of what you are doing.

Or if I ask you to tell me your farewell how it went or let us say your first day in college and you will relate events of what happened? You came here, whom do you meet for the

first time? What are the events which took place? How it unfolded? And so on and so forth. You can briefly tell me like a movie. You are aware, you are interacting with that particular thing and so, both of these are conscious in nature. Whereas, there is a kind of memory which is called procedural memory which is implicit in nature. How it is implicit in nature? Who things like how do you ride the bicycle?

If I ask you how to ride a bicycle or 21 days to bicycle or 7 hours to teaching bicycle, most of you will not be able to tell me. So, most people have tried this in my class and I will ask them how to ride a bicycle? Most people say you get on to it and start peddling, but then how do you get on to it and start peddling. That is since very funny or some people say you sit on it and you start riding.

If you sit on it on a starting bicycle if you follow. So, basically then there are steps to it, but you cannot vocalize it, you cannot go ahead and related it and that is the problem with it so, procedure memory are non conscious you do not interact. You do that so, bicycling a something which you do, but you not aware of it.

And a popular joke is that somebody said someone, when he was riding a bicycle of look the tire on your back of your bicycle is not moving. He saw and he fell why because he became conscious, as soon as he became conscious the bicycle from the bicycle he will fell and that is what it is all about implicit memory because you are not consciously aware. As soon as he became consciously aware then the problem arises so, these are the subdivisions of long term memory and also how we will discuss about these memory types in the upcoming lecture.

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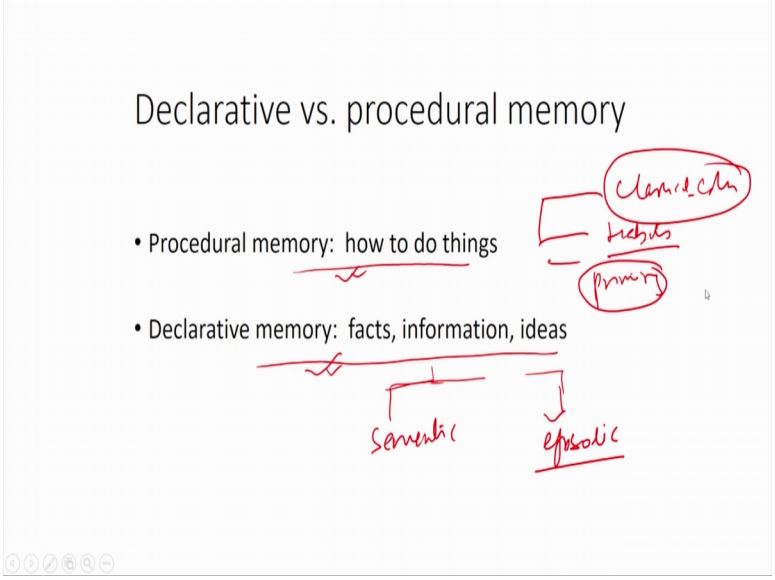

There are also as we are discussed is explicit and implicit memories, explicit memories are called declarative in nature. They hold facts information and ideas and then there are procedure memories they look at things like how things are done? How a particular thing happens? And so, on and so forth. Basically this is declarative procedural differences is in terms of explicitly or explicitly of it so, whether you are aware of it or not and this is another distinction which is there in long term memory.

The procedural versus declarative type whether a memories conscious or not and within the declarative as I said you will have 2 types. You will have the semantic type which is faction knowledge and you will have the episodic type which is basically the events of your life and within the procedural, you will have classical conditioning.

So, those things which you learn from classical conditioning you not know so, classical conditioning is a way of learning in which something is given to you. It is called reinforcement induce learning so, you do a particular behavior because something is given to you.

For example, think of those chips packet which says that buy it because, something comes free with him. He is the reward that you get and because of you are buying something and that is classical conditioning. You do not think too much and that is procedural in nature. Are you have habits are also procedural nature because if a habit of let us say I have a habit of scratching my head. If that is my habit, I do not think about

doing it or I have some other habit which is there so, habits are mostly non conscious from some memory you think about it and similarly the third form is called priming in. Priming also you do not consciously think about that the information is provided to you. So, basically consciously information is not given to you some kind of information brief facts about something is provided to and that facts helps you in later perception is what is call priming and these are the 3 types of memories which are out there.

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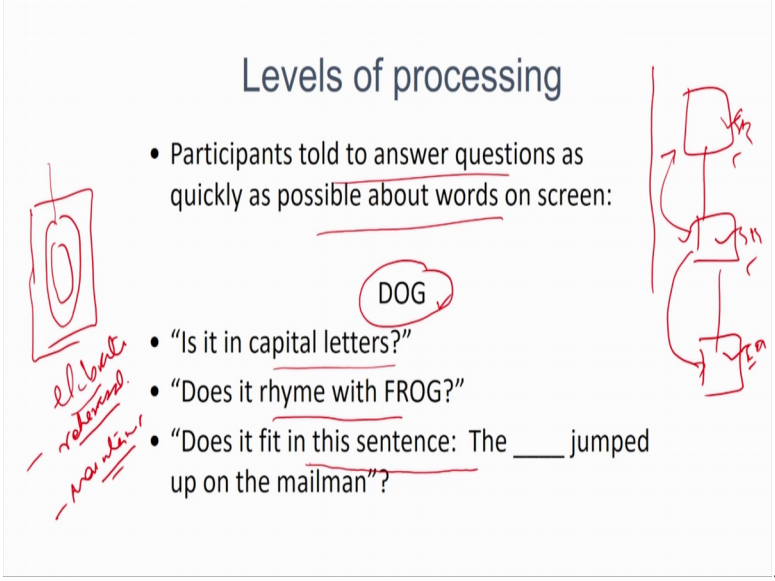

Now, there is level of processing framework which is been used or which has been named in addition to (Refer Time: 20:26) and (Refer Time: 20:28) model and what is this level of processing framework? This level processing framework says that there is no 1 store, 2 stores of memory so, that (Refer Time: 20:37) model says about 3 stores of memory.

So, I have a short term store, I have a sensor register, I have a short term store and I have a long term store into memory. So, 3 stores to be looked at and what happens here in this case is that there are 3 stores and 3 process which makes you basically go ahead and process information and there are processing systems or there is a process which moves information. But then there is a conceptualization of memory which says that it is not 3 stores which stores memory, there is 1 store and that is called level of processing store.

What the level of processing store says is that information there is one single information processing or store, but then what differentiates different kinds of memory is what is the

kind of processing that is applied and so, they talk about 2 kinds of processing, one is called the elaborate rehearsal. So, what is the kind of rehearsal that you do with information? That will decide how you have processed information and the other is called the maintenance rehearsal.

So, in maintenance rehearsal what happens is an information is basically processed or it is basically rehearsed for just the maintenance purpose. So, remembering a phone number from a telephone conversation for dialing it further, at some point of time is basically maintenance rehearsal because, you will not want anything in future with that number and will not process it at a deeper level, but elaborate rehearsal is basically processing something at a deeper level.

So, let us say somebody gives you a phone number and this person you do not want to remember for the rest of your life or any part of your life and so, what you will do is you will dial this number. So, next time you are dialing call centre or somebody for help which you want further in life that is basically maintenance rehearsal.

So, you will repeat the numbers in the point of time that you dial it. Once you get connected to it, the number is of no meaning to you but, let us say that your first day in college, a beautiful girl approaches you are gives you a number and now you are immediately head over heels for this person. If you remember that number, each number is now related to a meaning is provided a meaning.

For example, flower this that all kind of things are associated with each number which is out there and so, that number you might never forget and that is what is called elaborate rehearsal. So, elaborate rehearsal is a process where you attach meaning kind of a meaning which makes information retrieval easy. So, more processing you do the more elaborate rehearsal it acts out to be and basically to prove that this kind of a system exist participants a told to answer questions as quickly as possible on words which are shown on a screen. For example, the word which is shown here is screen 3 type questions we are ask.

One is what is the capital letter? Is it in capital letter? What does it rhyme with? And does it fit with the sentence? For example, the dash jogs over the mailman so, 3 types of questions we are ask quickly they had to relate this question. So, what we are shown to

people and they were asked to retrieve back these kinds of questions. What do you thing happened?

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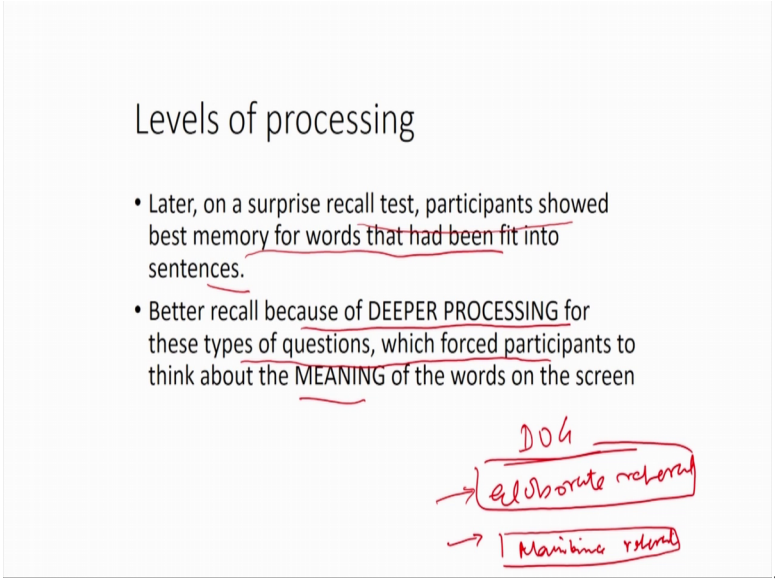

So, later on a surprise recall test participants showed better memory for words that have fit in a sentence. Why they remember better because the word then was processed for meaning so, that dash jumped over the friends or jumped over my friend or jumped over to meet me is actually the word dog and.

When it is processed for the word dog which now has a meaning when we are asking how many capital letters whether it is capital or not, you are not making meaning of the word dog or even if I am asking questions like what does it rhyme with frog or not. I am not interpreting it in a meaning level and interpreting it will now a caustic level, but when I put let us new sentence, it has to mean something the sentence need a completion and for that the word has to have a meaning and that is why it is recall better.

So, better recall because deeper processing for these type of questions which force participants to think about the meaning of a particular word on that is what I have been saying so, this kind of and the dog in the last sentence had went through something called elaborate rehearsal. The elaborate rehearsal is a system in level of processing which says that information if they are process for a deeper meaning, for some kind of meaning. They go through an elaborate rehearsal, but information like what whether the word was in capitals or not or whether the first letter was capital or not required

maintenance rehearsal because you do not need to process the word for some kind of deeper meaning.

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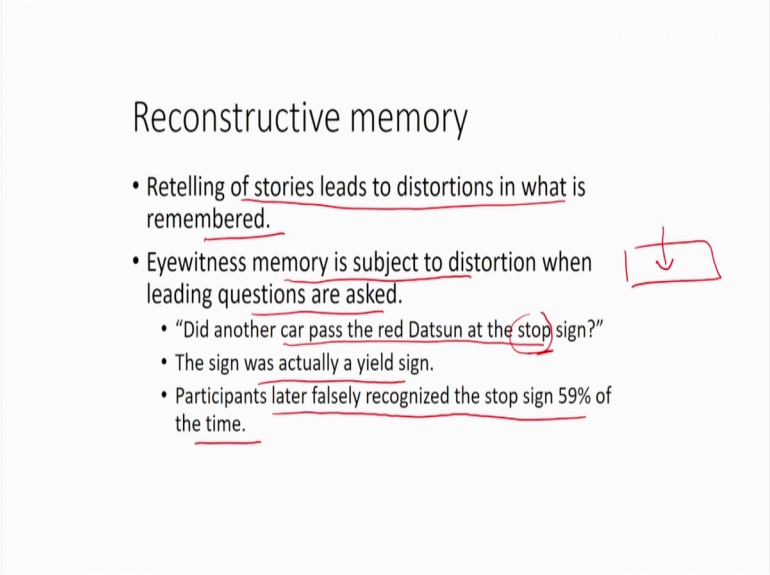

Now, a feature of memory that we have to talk about is called reconstructive memory. As we saw long term memory is generally reconstructive in nature which means that it is suffers from several inaccuracies. Whenever you show something and exact replica of that does not come back. There is always malleability in it, there is always an inaccuracy in it and that is what is called reconstruction of memory.

So, basically detailing of story is leads to distortions of what is remember and this kind of reconstructive memory was testing of reconstruction of memory or that memories and in accurate was tested long back my fabric Bartlett and what fabric Bartlett did was he wanted to test how these reconstructions work in terms of everyday life process. So, what he did was he gave a story call the war of the ghost to a couple of people to read and then later gave them some time to recall back. The story now when people recall back the story.

They change the story according to their own biases according to what they wanted to. Most of the items in the story were there, but then the story was somehow changed in a manner and this is call reconstruction and this is the first evidence of reconstruction. The kind of memory that you have the memory system that we talked about is highly

inaccurate in nature and it is highly reconstructive which means that only gist of information is remember.

When you see a scene, when you hear a particular audio or something or a movie or this happens with us also if you go to see a movie and when you come back from the movie and I asked you what do you seeing in the movie. You will be able to tell in 5 or 6 sentence, what you find a movie and the movie was 3 hours which means that you have to remember each part of it, but that does not happen. What you tend to remember just of it and that is one memories are highly reconstructive.

Also the way you will describe the memory based on your expectation so, if you expected a memory to be action, you will highlight the action part and you will not highlight some other part and that is basically called reconstruction. So, eye witness memory is subjected to distortion when leading questions are asked. There is of phenomenon in reconstruction a memory which related to something called eye witness memory.

Whenever an accident happens, peoples who are witness to that action is I called eye witnesses and it has been found that people who relate accidents or relate events, they have highly inaccurate memories. What happened or what could be done is that, if certain questions are asked in a frame in such a way that they give them a leading answer or they give them some kind of information, they tend to change their memory or reconstruction. For example, in an experiment which lofts dead where they showed people 2 cards collide with each other with certain speed and later on they were ask certain questions.

Questions like another cast pass their at the stop sign or with the sign we are actually l sign or participant later forces recognized stop science 59 percent of the time because what happened is that in the initial picture Loftus did not show there was no sign was the stop sign and this is basically something which Loftus added on to the participants. Answer the question give them or the questions which are asked very leading question is match their schema, it is match the way they saw the incident. That let us them to make false recognitions.

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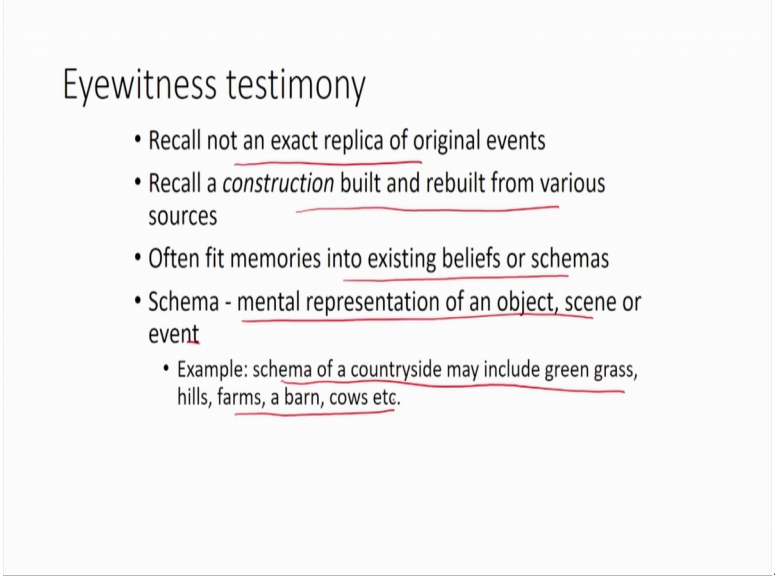

So, basically an eyewitness testimony the facts to be remembered is that recall is not an exact replica of the original events. What really happens is the original events are not recall and there is always a replica of that. Also recall is a construction, which is rebuilt from various sources so, the different sources something which of an experience with matter into it.

Whenever you are recalling something back, it is basically a reconfiguration of several facts and that can come from several sources. It could be something which was actually saw, something which you actually think, you saw something which you actually know and so, something which something somebody else and all this information will add up to form the recall often fit memories into existing believer schema. There are certain schemas which are there so, memories tend to fit into these schemas. Schema is basically a container.

When I say classroom, the classroom schema is basically the idea that there will be one teacher. When some student is they will talking to each other. Class board and this is an expectation. So, schema is basically this kinds of a framework which is out there and. So, when something fits into this schema it is basically easy process.

If I say that a student came to the class with red shirt on it is acceptable, but when I say a student, beside the student in the class cow sitting not possible because as not in a schema of a class and so, this kind of a thing is there. So, when things fit in to the

schema so, it is perfectly to say somebody came with a pink shirt or a pink trouser to the class that is perfectly and so, people will be leave it and that is it is a schema and people that is how eye witness testimony is basically manipulated. Schema is a mental representation of an object scene or event example schema of a countryside may include green grass hills farms and so, that is what I was trying to explain to you.

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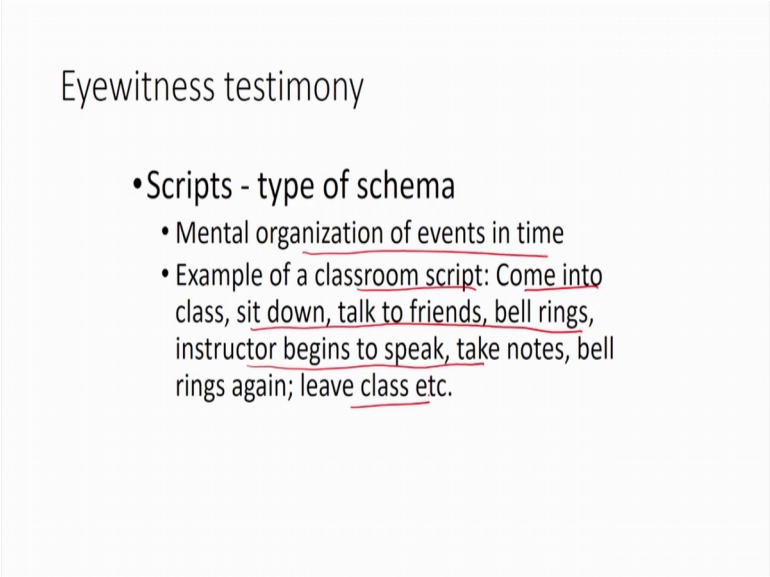

Similarly, there is something called scripts which are mental organization of events in time so, what is the scripts script is how mental how things occur. For example, let us say dinner, now dinner is a script because when you expect something to happen in sequence for example, you go to a dinner and you start with the first course which is the soup generally or some other hot beverage which is out there. Then there is a beverage to follow, then there is a first course, second course and third course followed by sweet and then there is ending with an ice cream.

So, you expected time related fact to happen or travelling in a bus or a car and you expect a certain sequence of event to happen. In this sequence of event is what is called a script so, example is classroom scrip. Coming to the class, sit down talk to a friend, bell rings, instructor begins to speak and so, on and so, forth if there is a script of this particular thing.

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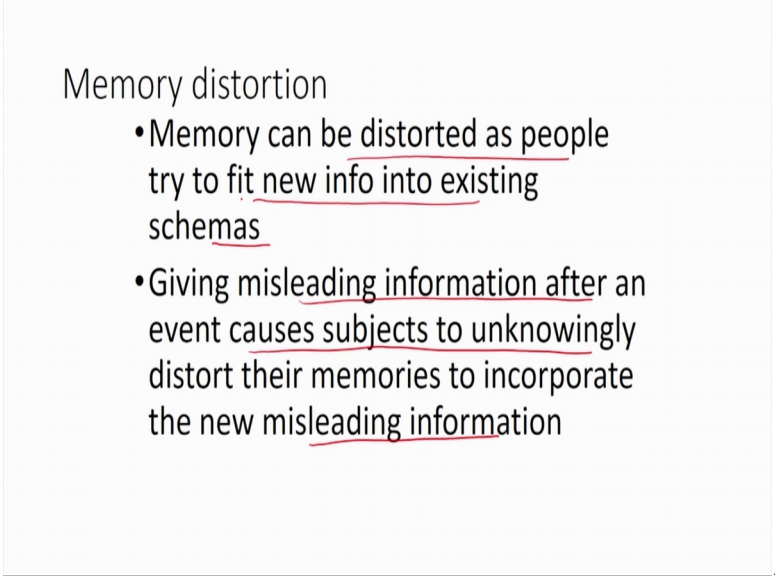

Memory distortion so, memory can be distorted as people try to fit new information into existing schema. Basically if I say that a person came in a blue trouser or red trouser and you expect in a classroom that can happens it will fit, but if I say a person came who was not wearing trousers or not wearing anything in the classroom that is not possible and that cannot be accepted. So, giving misleading information after an event causes subjects to unknowingly distort their memories and incorporate new memories into people and this is called and distortion of memory unless be information and this is really happens.

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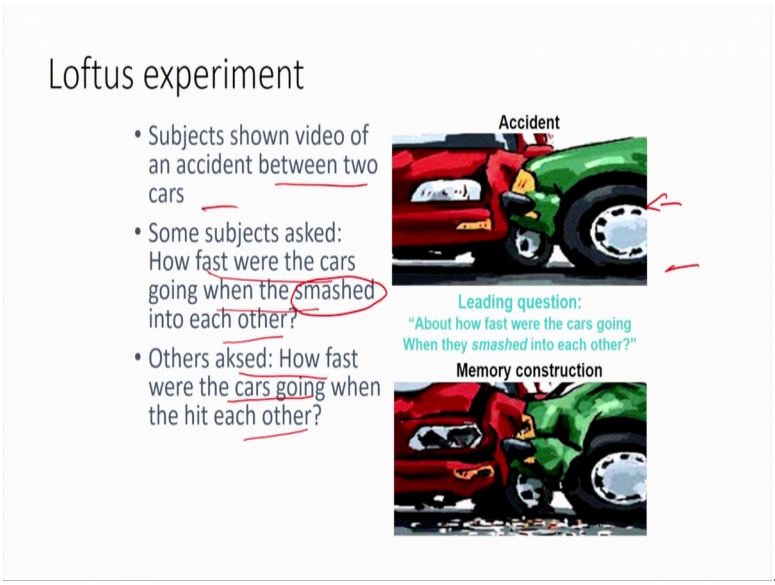

So, as I explained to you the Loftus experiment that we are discussing let us look at what the Loftus experiment was all about. Subjects are shown video of an accident between 2 cars this is 2 cars, there is an accident to it and some subjects we are asked questions like how fast for the cars going away when they smashed into each other. And for the other question, people we ask how for the fast going now the keyword is smashed here and this smashed means that they not actually touched each other and when they actually went ahead and we are no head on collision and. That is the keyword here and this kind of an experiment when it was done.

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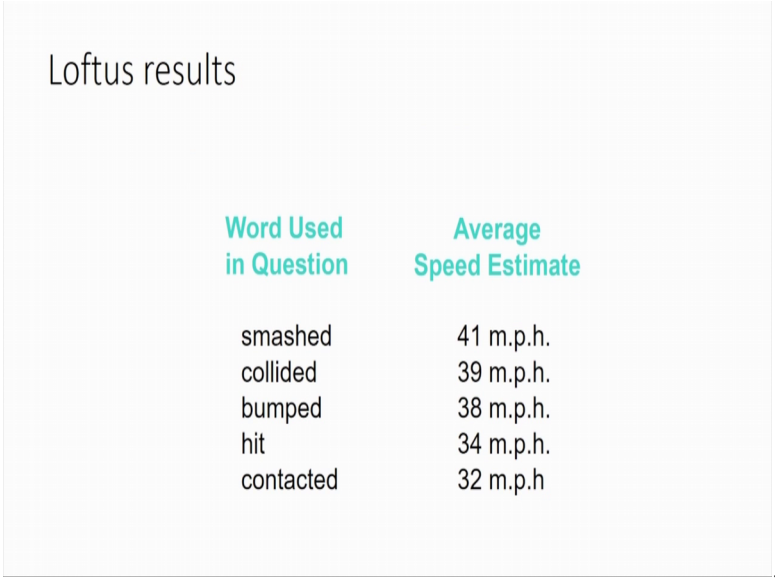

With people when it was ask how fast the cars going when smashed was used most people had a average rating of 41 miles per hour, but when it was contacted word was used the speed came down and so, this is how false memory is generated in the Loftus paradigm.

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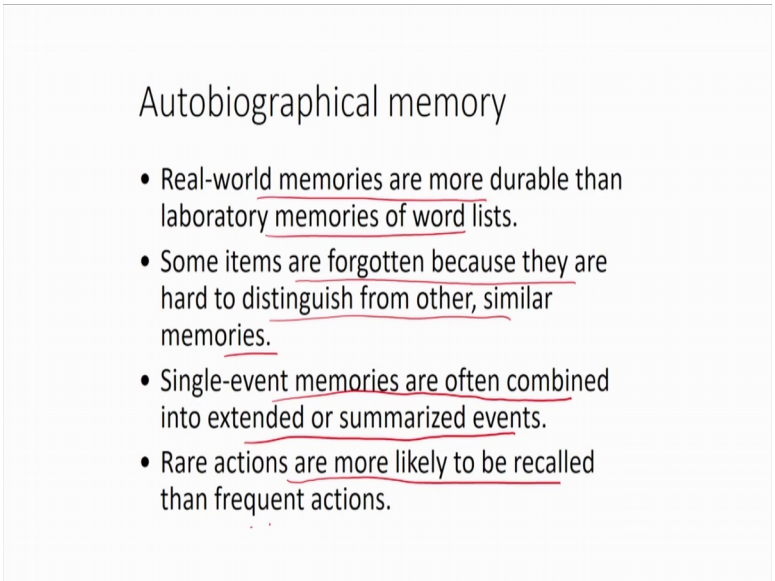

2 more types of memory which are there in long term memory is the biographical memory in the flashbulb memory will look into this one by one. So, basically what is autobiographical memory? It is a real world memory which are more durable than laboratory memories.

So, basically autobiographical memory is a memory of yourself. What do you do or what are your personal members about autobiography memories are so, some items are forgotten because they are hard to distinguish from other similar memories. So, autobiographical memories generally our memories that people have about themselves, your own memory of what happened in your life? How it happened? What events took place and those kinds of memories are called autobiographical memory. Now single even memories are often combined into extended summarize events so, as you progress in life what would happen is that one memory could be connected with so many other memories and the memory gets inflating.

And your memory of who you are as a child as you grow up, this adds on to it with several other factors and what happens every other memories combined with it and then you see a childhood as a particular thing, but when you a child and when what memory you have and when you become an adult and what memory of a childhood happens or a what you remember is basically what is called auto biographical memory. So, rare actions are more likely to be recalled than frequent action so, Those features which I rare

which never happened to often or what are remembering more in autobiographical memory.

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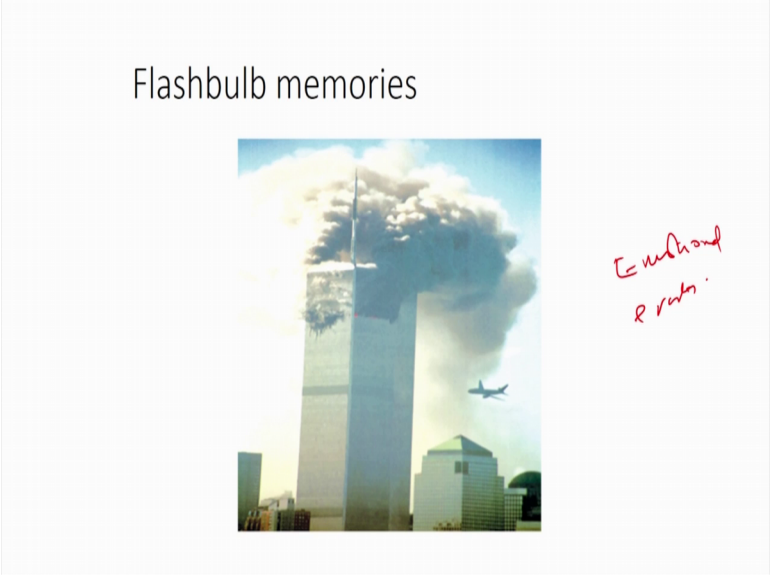

Another kind of memory which is the out there is called the flashbulb memory and what is this kind of memory so, this kind of memory was mostly related to emotional events.

And flashbulb memory was popularized why? Because it was believed that certain events in your life create certain flashes or create certain emotional events and when a memories stack to that, that is what is called flashbulb memory. For example, if memories of what happen if you are a cricket fan where were you if I ask you this question where were you when India won the 2011 world cup.

So, most people who are familiar with this idea of who like cricket fans will have very good idea of where they were and this India winning was a flashbulb item. Which basically meant that it created a situation, it created a think which was an even, which was emotional in nature and most people then go ahead and encode this particular memory or a encode there own leaving there own context with this kind of a memory and so, these are what is called false memory.

Now, 2 things to remember that this flashbulb memory are generally highly inaccurate in nature and they are related to or they are more prone to forgetting and distortions.

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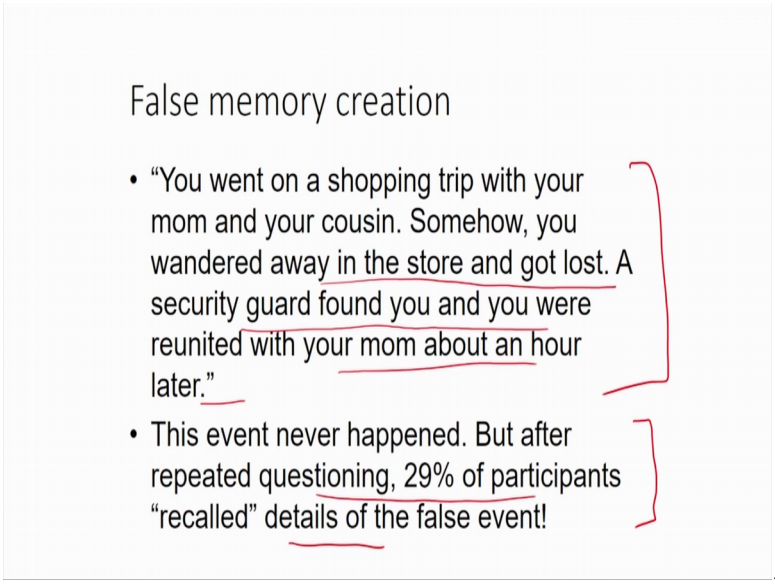

So, flashbulb memory for example, when you went to a shopping trip with your mom and your cousins somehow you wondered away in a store and get lost a security guard found you and you were united with your mom about an hour later. This is flashbulb memory where this event was so emotional that you actually thought that whatever you thought during that period of time whatever you have felt become flashbulb memory. Now this event could have never happened, but after repeated question 29 percent of people they called having this part as episode.

So, this kind of a structure was given people were shown this kind of a sentence and they were asked to remember the sentence and then recall was none and when people who are against shown this there was this particular information again and again, people we are shown this bit of information again, they falsely recognize that this could have happened and the remember this flashbulb memory and this case this is the 9 11 attack on United States from most people do remember where they where during the 9 11 attack and it is what is the flashbulb false memories all about.

So, generally 2 things about this memory it is highly inaccurate and then it is related generally related to inaccuracies and forgetting then distortions.

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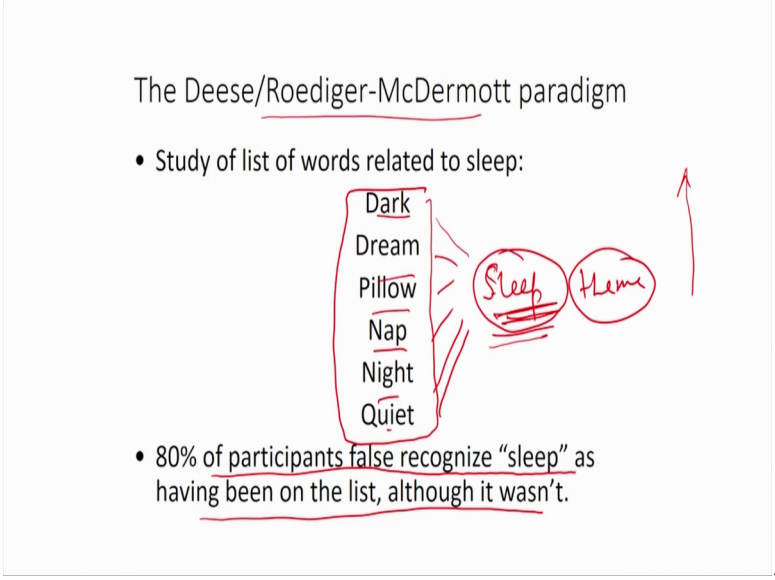

Now, there is of mythological way to create false memories. Now we saw how eye witness testimony is one way to do false memories, but there is another way to create false memories and that is called the Deese/Roediger and McDermott paradigm to show that memories are in accurate and to show the fact that false memories are memories that never occur can actually be created and embedded into people's mind. Now for the DRM paradigm, list like this is given to people.

Now these lists are semantically the words in this list are semantically related to each other for example, dark dream pillow nap night quiet and I am very sure that when you look at this list you do know or it seems to you that all this words are highly semantically related or highly connected to the word sleep. It seems like these words are very connected to the word sleep and that is what it is all about. So, basically what happens is a list like this is present to people with the theme word here, the theme was under which most of these words fall which is sleep is not presented.

So, when this happens and people are just given this list and where they asked to recall this list back most people among these 80 percent people also remember the word sleep also recall the words sleep back. What does it really mean? The theme word was never presented, but people falsely recognize this word and falsely recognize the category thing work. So, 80 percent of participants also recognize sleep as having been on the list as it even if it was not there and this is one way of creating false memory or distortions in

memory. Now you know that long term memory is highly inaccurate in nature. It is always it is only adjust and you can never trust a long term memory. The reason is that this gusting process of extracting only relevant information from whatever information is happening for whatever event is happening if taking only the relevant information is a classic think for long term memory because that is how it seems space. What it does is if whatever information is passed on from the short term memory or whatever kind of or whatever context it has or whatever free information it has, it takes in any new information.

Whatever is coming from the short term store and maps this to the long term store or to the already known store. Otherwise if a information that is coming to you for example, if you take breakfast everyday in the thinks like you make breakfast everyday or you sleep everyday that kind of information is returned it is not needed. Where let us say some day you sleep and a burglary happens in your home, now that information will be because burglary is not what was not expected. It is novel information and something which even never expected to be so, this information will be embedded. We sleep information, this information will be embedded otherwise a normal sleep information will not be embedded here.

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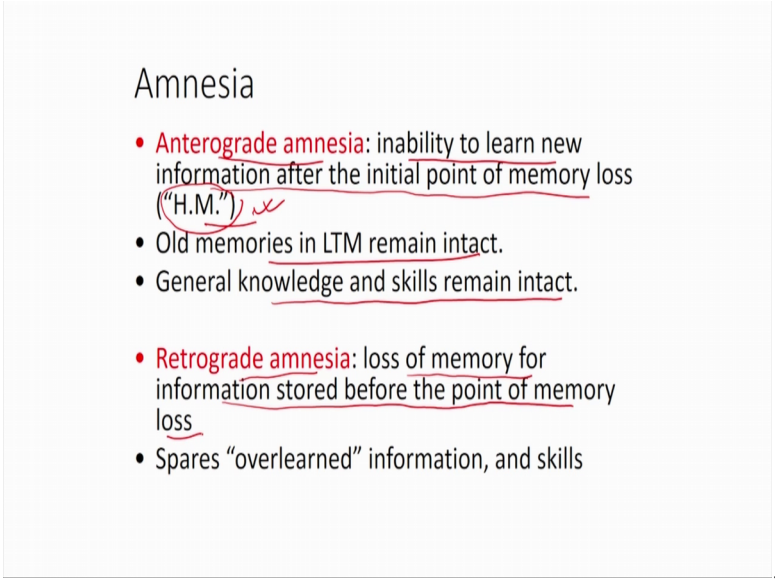

Now, there as if memories are important to us so, is a process called amnesia which is basically not remembering things or not remembering long term memory and there are 2

types of amnesia, one is the Anterograde and the Retrograde amnesia. So, Anterograde amnesia is the ability to learn new information after the initial point of memory loss or as an example is H.M.

So, Anterograde amnesia, this is basically what it leads to is the inability to learn new information so, anything with the short term memory is basically not good at all. So, you learn very well or you remember very well information of the past, from the present you would not remember anything and that is called Anterograde, old memories in LTM remain intact.

You remember everything from the past, but new information do not get encoded. In this case general knowledge and skills remain intact. You know every fact, you know every detail, but personal memories from some new event is never encoded only old memories encoded in a classic study is of the patient.

Similarly the retrograde amnesia where loss of memory for information stored before the point of a memory loss. What happens is if you have an accident and you forget everything from before this is called retrograde amnesia. In retrograde amnesia, few things from the past of forgotten, new things can be retrieved, new things can be added up, but old things cannot be stored or old things cannot be accessed if this is retrograde amnesia and spares overland information and skills.

Those skills which you practice so much are the procedure and every basically is spared in this case. Basically, then in this section what we did was we looked at several kind of memories, long term memories what are they? What kind of long term memory is? What is the need of long term memory? What is it is capacity? And we also looked at spanning from the capacity.

You also looked at the kind of forgetting that happens here. We looked at different types of long term memory, different kind of interference is which is there and weather what is the format which is there and then whether a long memories are in accurate or not. And if that is in the accuracy in memories, if there is some kind of distortions in long term memory what is the reason from this distortions? Also what this distortions lead to? Or what these distortions are? And how does distortions really function is what we looked at. We also looked at 2 different kind of memory one is autobiography memory, which is

the knowledge of oneself and the flashbulb memory which is a kind of memory, which is attached to highly emotional incidence in one's life.

Now, auto biological memory is basically very difficult to test. The reason being that nobody knows your autobiography memory and so, testing of it is really difficult, but with flashbulb memory testing's can be done and a lot of work in flashbulb memory was done where it was found out that the flash is not needed at all. Basically there is no need for this emotionality event and this kind of memories are the flashbulb and the autobiography memory although there is very popular, but a lot of testing has not been done on to get and.

So, these are parts of long term memory, but lot of questions are not been done it way. There 2 classifications or 2 kind of memory which exists in the long term store is basically the procedural and the declarative. Now in the upcoming lectures we will not look at the procedural one because, it is little bit difficult to look at procedure will memories and since this is a very basic level course.

So, we will look into the declarative parts of memory into it. In the upcoming lectures we will look into both the semantic type of memory, What does is store? How does it store? What are the models for it? What is the way in which it functions and so, on and so forth. Will also look at the episodic memory of how visual imagination happens? Or it does visual images and how events are stored? How they are retrieved? And that kind of information, that kind of feedback is what we will look into in the upcoming and we will look into detail these kinds of long term memory.

Overall then in this particular lecture we just looked at long term memory sub divisions how it functions? How it is forgets types of it and how if in accuracy is exist? How does it exist? And how these in accuracies are basically mapped for or accounted for. Let us meet next class and discuss some other types of long term memories and how they function.

Thank you.