Advanced Cognitive Processes
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Lecture - 31
Cognition and Emotion

Hello and welcome to the course introduction to advanced cognitive processes I am Ark Verma from IIT Kanpur, we are already in the 7 th week of this course and we have already talked about a variety of things this course was termed higher cognitive processes because we wanted to talk about things other than the perception attention memory which anyways lay the foundation of the cognitive activity that we engage in.

So, if in this course talked about knowledge, categorization, concepts we have talked about language to a large extent, we have talked about reasoning decision making problem solving. So, we have done quite a bit about the higher so called higher cognitive processes by now and in this week I will try and talk about one of the very important aspects of cognition which is also recognize as a very important aspect which kind of affects the operation of so many of these higher cognitive processes if you might call them.

So, to this week I will talk about cognition and emotion we will have 5 lectures talking about various aspects of the interaction between cognition which is the general things like attention thinking problem solving those kind of things memory and also how emotional or say for example, mood states interact with them and what are their mutual effects on each other.

So, let us begin this week and I will try and talk to you about I will try to draw your attention to the kind of work we have discussed still now. So, if you have paid attention if you have been following the lectures you would have noticed that most of this research that we are talking about most of this research on which a lot of cognitive psychology theory is based has basically been conducted in our laboratories.

It has followed the experimental technique which suppose with the in which the attempt is to control all possible sources of variation other than the independent variable other than the major variable that you are interested in manipulating. Now what they are does

to this entire setting is that we kind of sometimes end up creating a scenario which is not really like how this you know activity or how this cognitive process would occur in the real life settings. You know in the real life settings there are not so many controls in the real life settings you cannot you do not cordon of so many of the other variables that might you know play a part.

So, this is one of the things that has been felt throughout and that is one of the things because a lot of cognitive psychology research or actually most of cognitive psychology research has been done in psychology laboratories, you know laboratories are a small rooms where say for example, computer system is kept there you can do your behavioural tasks there and then you can you know very the kind of method you will use to look at the data say for example you will go for eye tracking eg or fmri or wherever.

Now, this basically has led to a degree of scepticism in you know people within the discipline as well outside the discipline as well who basically questioned about the ecological validity of that kind of findings that we are coming up with.

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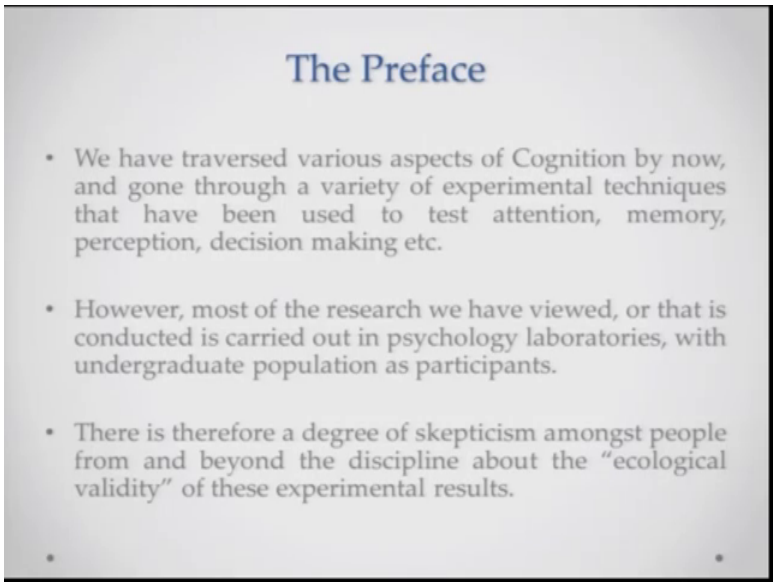

And just for people who have who let us say just as a revision talk a little bit about ecological validity as well. Now, by ecological validity what I am actually talking about this is the fact that, whatever results you have got and you know whichever process you follow to collect that data whichever process you follow to really come up with those kind of findings the experimental designs the participants etcetera, how easy it is or how

probable, how possible it is to be able to generalize from your experiment to the real life settings how say for example, how easy or difficult it is say for example, if I am conducting an experiment here in IIT Kanpur on a bunch of you know 20, 30 undergraduate students how from that data I will be able to tell you about you know all people that are there in Kanpur or maybe all people that are there in India or basically you know the kind of variables we talk about in cognitive psychology.

The assumption is that even if I am doing this experiment here in Kanpur with this bunch of students that I have sampled because of this cognitive because I am talking about this cognitive variables technically I should be able to talk about the whole of humanity using just that kind of sample. This is one of the problems this is this is basically termed as ecological validity the generalizability of your data you know how well your data will kind of extrapolate to larger groups.

So, the factors that I have been mentioning have been you know underlined have been thought to be in some ways impediments in this gross generalizability of the experiments. Now; obviously, ecological validity and there is; obviously, a cost to pay here if you want to really again get into the you know really ecologically valid things collecting data in less controlled situations, collecting data on a large number of people those things do have their own you know logistic problems and those things do have their own problems in terms of methodology as well, you know if you do not control so, many variables you are not going to be sure of what kind of effects you know you are getting.

So; obviously, there is a trade off and interestingly there is an acknowledgement of the fact and there is concerned effort in the field of cognitive psychology, nowadays that a lot of people are trying to take their experiments as they are on larger groups, a lot of people are trying to say for example, if your task is a very simple let us say a lexical decision task where you have to just look at a word and say whether it is a word meaningful word or not a word, I have seen and I am I have been coming across studies where they have kind of pushing these tasks to things like you know your mobile phones or what we have pdas and stuff like that and a lot of people are doing I came across the study in some time back where they collected data on 300, 1000 participants.

So, there is that kind of effort I will come back to this discussion on cognition and emotion. one of the important aspects of the kind of experiments that are done in cognitive psychology and one of working assumptions is that all of these people who are coming to our labs, all of these people who are you know participating.

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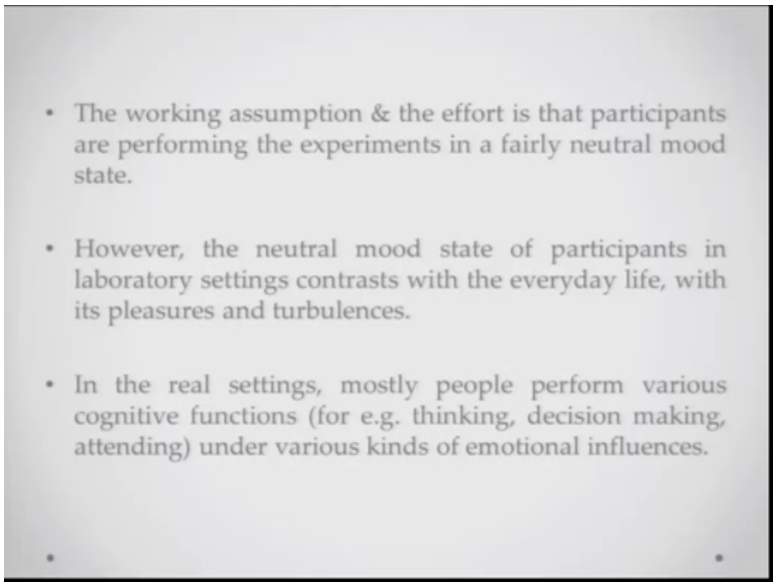

And in our experiments and giving us data are all in a sort of a neutral state of mind. So, you assume and sometimes you take that effort to relax a person to make them relax, make them sit well, you know ask for a glass of water and stuff like that make them relax. So, they are in a neutral state of mood you know they are in good place to be able to do that experiment sit on that computer for you know whatever will amount of time.

Now, this aspect that we sometimes try and ensure in this aspect that you assume that your participants are in such a state of mind before they are doing these experiments, kind of create a contrast between how they would do these decisions in real lives because in the real life you come across you take so many of these you know decisions you solve so, many of these problems. In a states of mind which are not neutral I mean sometimes you are very excited about making particular kinds of decisions, sometimes you might be really you know low, you have not had a great day and you are still making a particular decision.

So, if cognitive psychology has to talk about all of these things cognitive psychology has to in some sense take account all of these multitude of emotions that somebody goes

through before they are engaging in these things say for example, whether it is attention or when whether you are talking about recall of material under memory experiments or whether you are talking about thinking and decision making and problem solving.

This is basically one of the things that cognitive psychologists are really looking at you know in real life setting say for example, most it is a known fact it is an accepted fact that most people perform various cognitive functions under the influence of different kinds of emotions. So, if you are coming out with a study which is largely based on people who have performed it in a very neutral state of mind you will wonder and you know the question also comes that whether these conditions where wherein you have done your experiment we will actually extrapolate to people actually making those decisions out in the field.

So, this is where you know the cognition and emotion interaction comes in and what has happened is that psychologists are trying to really even mimic those situations in their lab. So, obviously, there are you know there are methodological considerations that you cannot take a lot of your experiments out of the lab directly and; obviously, there are efforts at designing experiments which can be, but for the time being what psychologists have been trying to do is they have been trying to mimic.

Such kind of emotional situations you know positive moods negative moods excited moods surprised moods in their labs and maintaining those moods manipulating those moods of the participant and then asking them to engage with their externality task. So, the idea is that if you want to really check the effects of mood affects of emotional states on memory.

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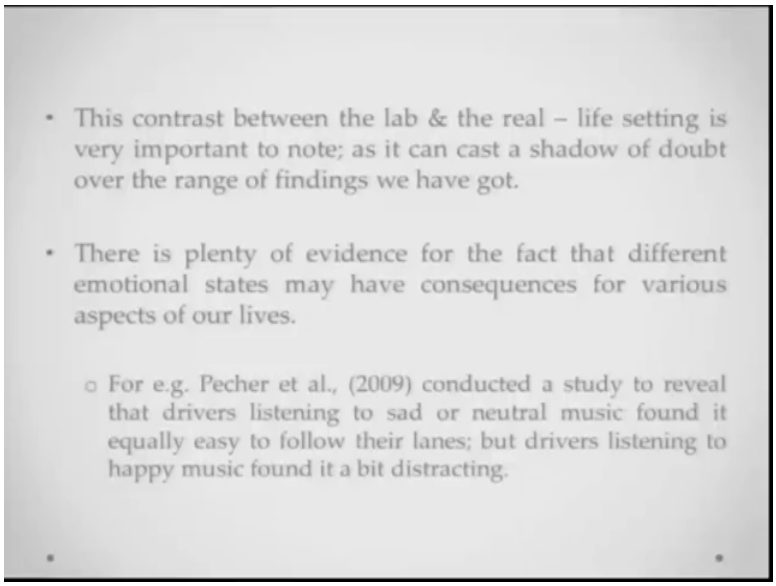

One of the things you might do is you might manipulate the mood of the participants when they come to you might a expose them to positive stimuli you might exposed them to negative gruesome stimuli you might irritate them by using particular kinds of waste and you get them in their state of mind before they are actually doing your task and those things have been for a long time and people have been trying to study these things.

An example is a Pecher in colleagues they did this study in 2009 and they would actually trying to investigate how drivers mental states are. So, what they did was they basically found that you know when drivers are listening to sad music or neutral kind of music you know something that is low in arousal or something, what they are doing is, the they report that it is easier to follow lanes, it is easier to stay in the lane, easier to drive at a constant speed when drivers are you listening to either sad music or a neutral music.

On the other hand if these drivers were listening to positive happy music chirpy music they actually found it a little bit distracting to you know follow their lanes to stick to their tasks because apparently that that emotional nature of the song is doing something to them it is probably interacting with their concentration it is interacting with their you know executive processes and so on and so forth.

So, this is some of the this is one of the things that people have this these kind of experiments people have been doing and trying to find out what happens with the when you do when you induce such kind of mood states. So, let us talk a little bit about how

what are the techniques what are the methods using which people are manipulating mood states.

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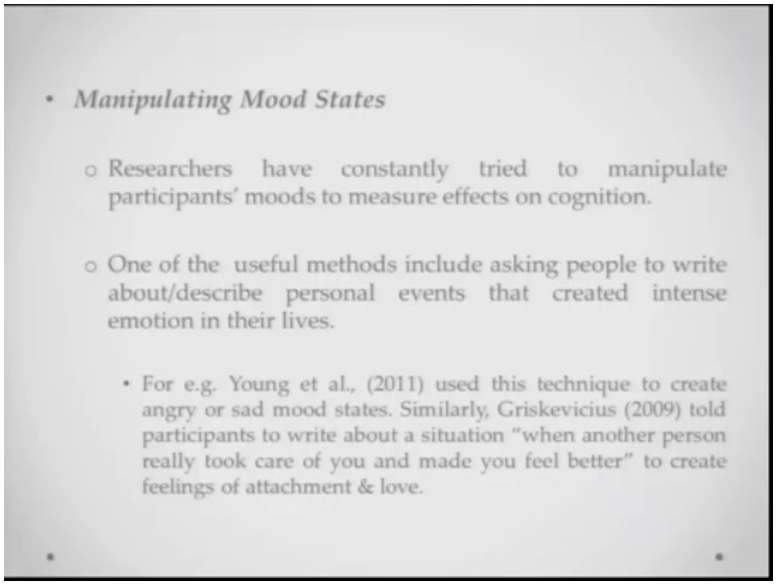

So, researchers have constantly tried to manipulate participants mood states to affect the to measure there is f their effect on cognition. So, one of the useful methods includes basically asking people to write about or describe personal events that had created intense emotions at some point in time.

So, Young and colleagues in 2011 rather recently they use this technique to create angry or sad mood states they asked participants you know to write about things that made that have made them angry in the past or write about things that have made them sad in the past and the idea is when the participant is actually writing a description or such kind of events the participant actually you know going through almost going through those kind of situations again and such mood is already induced and then you can actually you know make them do particular kinds of tasks and you know that the effects of these tasks are very closely related to the mood state that you have been used.

Slightly differently and Griskevicius basically in 2009 he told participants to write about a situation when another person had really taken care of you and if made you feel better and so on and so forth. So, this is basically this kind of a descriptions basically served to induce the feelings of attachment induce the feeling of love among their participants there you know the positive giving kind of a state.

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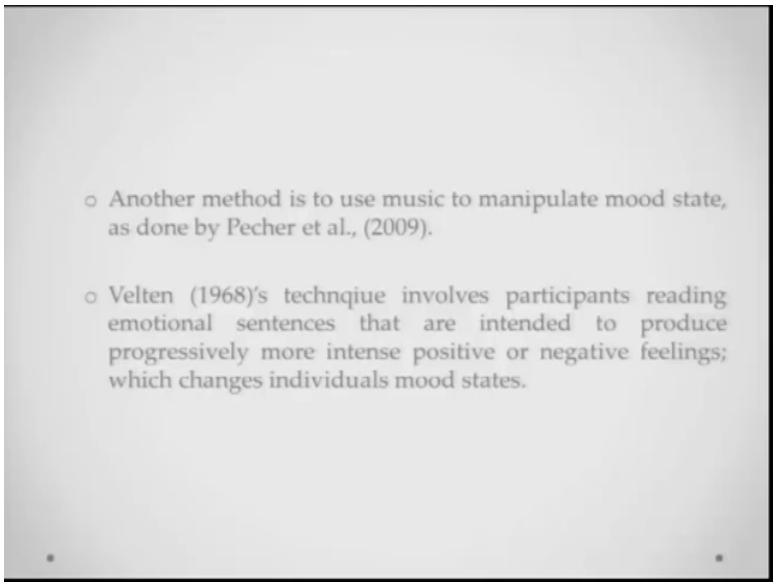

Another method that could be uses to for example, use music to manipulate states I mean I talked about in a Pacher and colleagues study of 2009 where they were actually you know exposing drivers truck drivers to different kinds of music's and that is also is being found to be a reliable way of manipulating a participants moods. So, a participants comes to a lab you ask them to kind of wear headphones and then you kind of play a music whatever your choice be and whatever the theory says that you know this kind of music induces this kind of mood this kind of music induces this kind of mood.

And according to whatever your theoretical considerations might be you expose the participant to that kind of music for a given duration and then after that you kind of ask them to you know perform your task and your assumption is that whatever results you are going to get are basically very closely linked to the mood state that you have induced. This is one of the methods very you know well known or say for example, well used method.

Another method we can talk about is Veltens method Velten in 1968 you basically asked participants to read emotional sentences that are intended to produce progressively more intense positive or negative feelings. So, other than in the production part which I talked recently you know young and colleagues method, Veltens method basically involves participants actually reading passages and reading sentences that are highly emotional and that reading them will basically is that kind emotion.

So, this is also another methods you can write small passages and those passages could contain you kind of you know get people to agree on that 6 people 10 people agree that this particular sentence here are this 2 3 4 lines here induce a positive state. So, that is done for positive state these 4 5 lines induce a negative state and then when the participant comes you ask them to read depending on whatever condition of experiments you want to induce, ask them to read these sentences and then go to your task and your task could be completely unrelated.

It could be basically a visual search task in perception or a memory recall task or say for example, decision making or a problem solving task and because you have induced a negative or a positive or a sad or any type of mood. The kind of decisions they are going to make or the kind of you know search performance or memory performance that they are going to give will be closely related to the mood state that you have induced.

Now, I have talked about these methods let me kind of shifts to one of the very important aspect basic aspect in mood studies. So, there is a lot of effect there is a lot of crosstalk between how different kinds of emotional states and I am talking about moods more important more precisely I think the entire being we will probably be talking about moods more.

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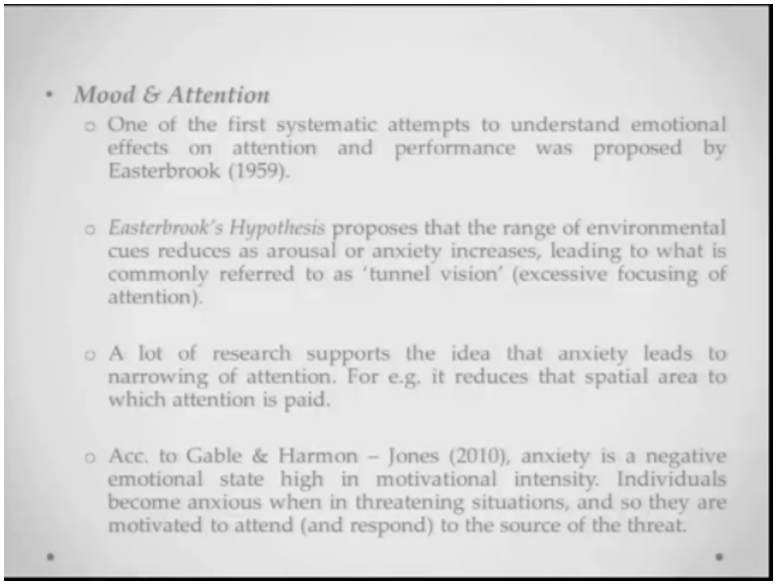

Because moods are let me just define them for you moods are transient emotional states that participants or people in general keep going through you know, during a course of a

day there will be time that you will feel very happy choppy and you know a motivate a say for example, early in earning and you know you would plan so, many things I am going to do this that and this is my plan of the day and there are other scenario say for example, you could feel very sad about in the same day you know evening something happened and you kind of or sad. So, these are transient emotional states that people go through throughout the cycle of the day.

And they do not really last long, but the point is that by the you know for the duration they are there they can actually influence the way you are behaving say for example, if you are in such a bad mood something as bad is happened you just come out of home or come out of school and then you meet somebody a friend or you know a person that you might know of and this person waves and say hello and you say in such a bad mood you do not even reply and you go ahead and this person is going to think maybe this guy does not like me, but it is just because your mood is not really correct at that point and time.

So, moods are these kind of stage and the cognitive psychology research or research looking into emotion has made use of this transient emotional state to able to be able to measure how these different emotional states might you know influence people is cognitive functioning. So, let us try and come back to this I will talk to you a little bit about the effect or the interaction between mood and attention.

So, one of the first systematic accounts one of the first systematic attempts to understand this interaction between emotion and attention and performance was given by Easterbrook way back in 1959. So, he gave a particular hypothesis which is better known as Easterbrook's hypothesis nowadays and Easterbrook's hypothesis proposes that the range of environmental cues you know that get attention the kind of information that you are picking up from the environment reduces as the arousal or anxiety keeps on increasing and this basically leads to what is referred to as you might have heard this term a lot of times.

Tunnel vision if you are very highly aroused you know a very focused or say for example, if you are very angry sometimes you know you might not be able to you know attend to so many other cues in the environment you are very happy in that excitement you miss on so many things if you are very sad you are not really interested in.

So, these kind of things when you are generally talking about anxiety we generally talking about high arousal this is what you know it takes you to it takes you to what is referred to as tunnel vision you are kind of focusing only on things that are relevant to you that are relevant for your purpose and kind of try and miss you know where sometimes to decidedly sometimes unknowingly miss out on a lot of other things.

So, a lot of research has supported this idea there is a lot of research evidence you might look up I will talk to you about some of the researches today is well that anxiety when you are very anxious in your kind of you know. Say for example, waiting for something and you know searching for something and those kind of things leads to what is referred to as the narrowing or attention if you are highly anxious you will going to be able to look at particular details, but you might miss out on a lot of other relevant details.

So, according to Gable and Harmon Jones and they did the study in 2010 anxiety is a negative emotional state, high in motivational in intensity because if you are anxious about something you know sometimes you waiting for someone and at a railway platform and there are so many people, there is a lot of crowd over there and because you are anxiously just waiting for this one person there might be 2 3 4 others that kind of pass that you might already know but you just did not pay attention to that.

You know things like you are and so, many things that are happening because you are just in that heightened state of a arousal heightened state of motivational intensity that you kind of leave out all the peripheral information that is not directly relevant to what you looking for. So, individuals become anxious in different kinds of situations in threatening situations and so they are motivated to attend and respond to the source of thread I am just taking an example from the various other possibilities.

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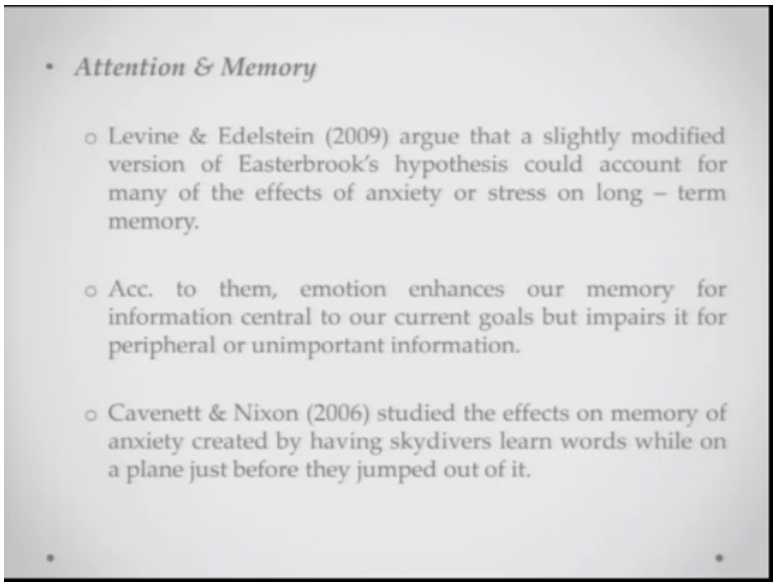

So, that is one of the things if you highly a feeling threatened and what the idea will be that you are most motivated to respond to the source of threat and nothing else, let us talk a little bit about how attention might impact your memory performance or how this interaction between emotion and tension and memory it will be goes up placed out.

So, Levine and Edelstein in 2009 in they actually argue for a slightly modified version of Easterbrook hypothesis and they say that you know if you kind of modify this one a little bit it could account for many of the effects that people report on anxiety or stress on long term memory and they basically say that you know a emotion enhances or memory for information central to our goals.

If you are happy or if you are sad and if there is something like that emotion will this emotional state will you know enhance your memory for the information that is relevant at that point and time, but it impairs it for peripheral or unimportant from suppose you will angry at somebody, you know suppose you very angry at somebody and whatever information about that person is being given only that is what you are attending all the other things only information that kind of is going to reinforce your anger is being attended everything else is kind of being left out these are these are the examples that are possible.

Cavenett and Nixon in 2006 they try to study the effects of memory on anxiety by you know having skydivers, you know skydiving is an activity that can be potentially you

know very anxiety provoking. So, what they did was they actually wanted to check the effects of anxiety and memory. So, what they did was they asked skydivers to learn a list of words while on the plane just before they were about to dive. So, you know at the height of 8000 feet your kind of all geared up you with your parachute and everything else and at this point and time these people are asking you to remember a list of words so, this is one.

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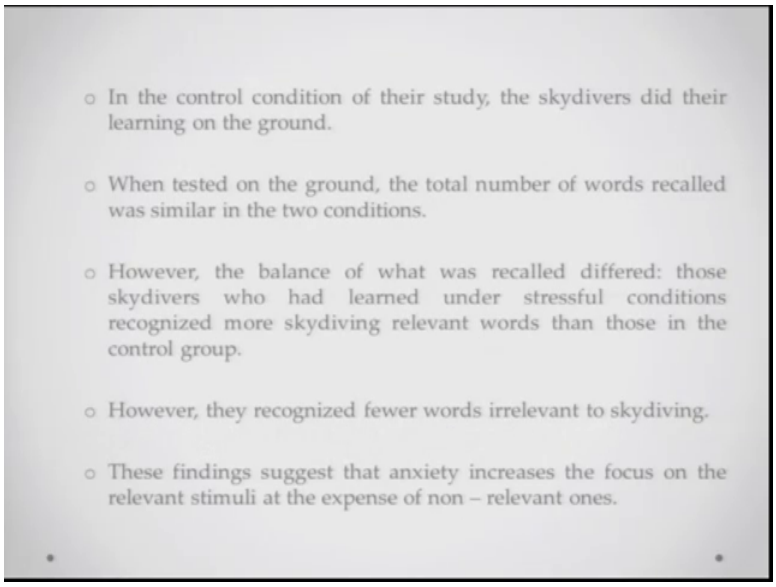

And the second was the second condition in the control condition they asked these skydivers to learn the same list of words or a different comparable list of words on the ground. So, when tested on the ground the total number of words recalled here was rather similar in both the conditions, but the balance of what was recalled actually differed a lot. So, the skydivers who had learned the words under stressful conditions you know just before they were about to jump of the plane and they might have been making so, many calculations they might have been afraid or anxious about the jump.

They recognized words mostly you know relevant to skydiving the number of words that they recognize the number of words that they recalled which were irrelevant to skydiving was much few I mean it was much very less as compared to when they were learning these words while they were on the ground. So, these findings suggest that anxiety does increase the focus on relevant stimuli at the expense of non relevant ones if you are

anxious you will most and this can actually be a vicious cycle of sorts because you are kind of attending to things only that are reinforcing your emotional state in some sense.

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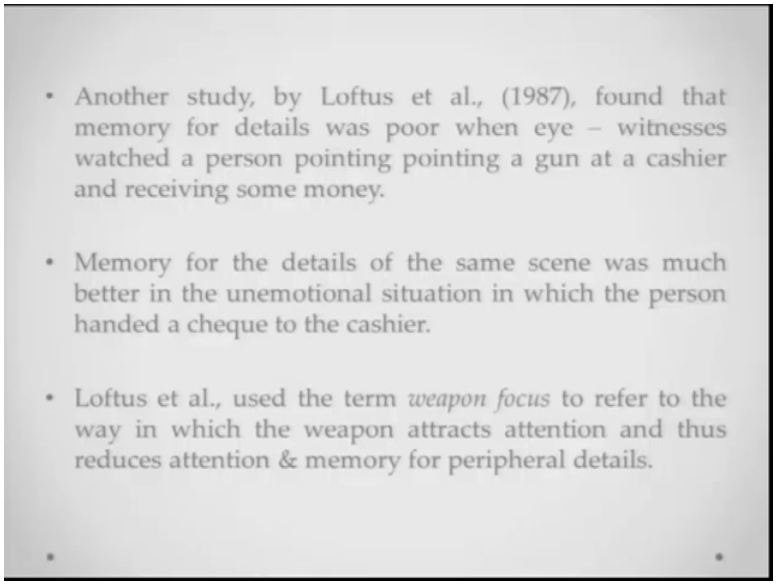

You can talk about another study by Loftus and colleagues (Refer Time: 23:04) study found that the memory for details was rather poor when eyewitnesses watched a person pointing a gun at a cashier while receiving some money. So, if you are there looking at you know and there is the you know somebody who is trying to loot the bank and they are pointing a gun at the cashier in receiving some money a lot of details they would miss the participants would not remember a lot of details memory for the details of the same scene was much better in the unemotional situation when just when you know when this person is just giving out a cheque and waiting patiently for the cashier to count and get the money back.

So, Loftus and colleague they use a very interesting term they use the term weapons focus to refer to the way in which the weapon attracts the attention because weapon is seen as a source of threat. So, if you detect a weapon somewhere having your kind of insight in yourself primed to keep attending and keep looking at the weapon because you know there is this perception of possible threat and stuff like that so, this is basically what is something that you know it will kind of ask you to filter out a lot of other peripheral things that you might not really be interested in at that point and time.

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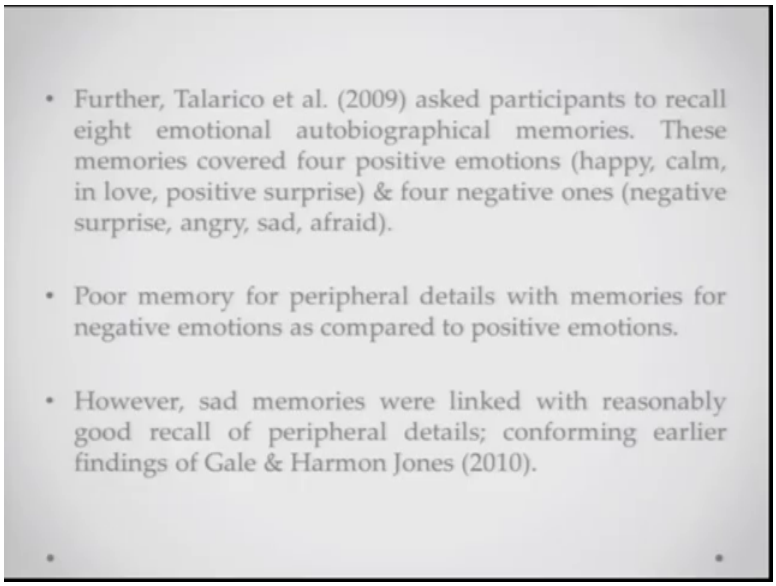

Now, moving on Talarico and colleagues in 2009 they asked participants to recall 8 emotional autobiographical memories. So, for events 4 positive events that had that have made you feel happy or calm or in love or positively surprised and 4 negative emotions say for example, when you are negatively surprised or you are angry or you are sad or you are afraid of something.

So, four different emotions they were basically us and they found was that there was a very poor memory for peripheral details with memories for negative emotions as compared to positive emotions when they were talking about positive memories they could provide a lot of details as well, but when they were talking about negative memories they would probably talk only about those negative things that happen only things that were triggering negative thoughts, but not so many of the other details about these memories.

So sad memories; however, were linked with a reasonably good recall of peripherals in details confirming the earlier findings of Gale and Harmon Jones. So, it is I mean; obviously, sadness is also a negative emotion, but compared to some other kinds of you know negative emotions evoked here negative surprise anger and fear sadness actually led to better recall of these peripheral details. So, that is one difference you can make that you know among the negative emotions this is one that still kind of maintains your recall of negative mood of peripheral details.

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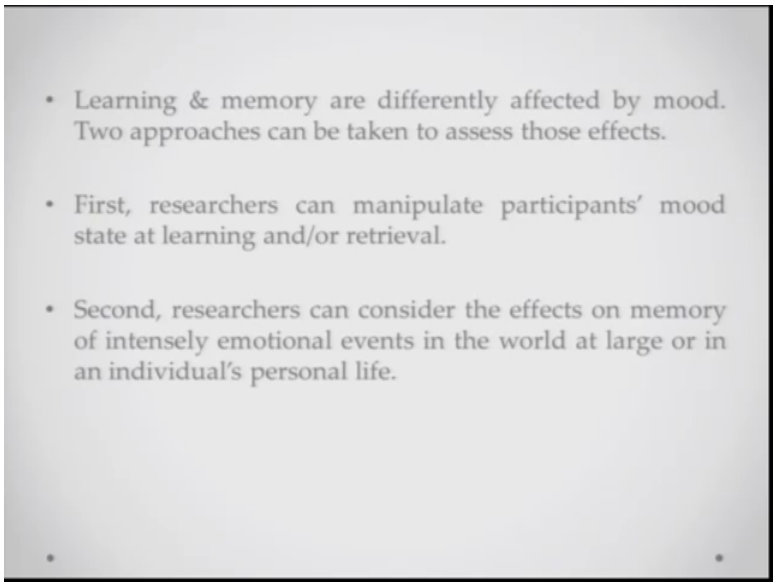

Now, learning and memory are directly affected by mood as well and there could be 2 approaches that you can take you know you and trying to understand this interaction. The first is that researchers can manipulate a participant's mood state at the learning time or at the retrieval time and the second is that researchers can consider the effects on memory of intentionally emotion emotional events that are happened at the you know in the world at large or in the individuals you know personal life.

So, what kind of highly emotion provoking events have happened and how they have kind of affected your memory that is one and the second is you can; obviously, you know take an individual it may manipulate the mood state and see how you know the memory of a particular things will be.

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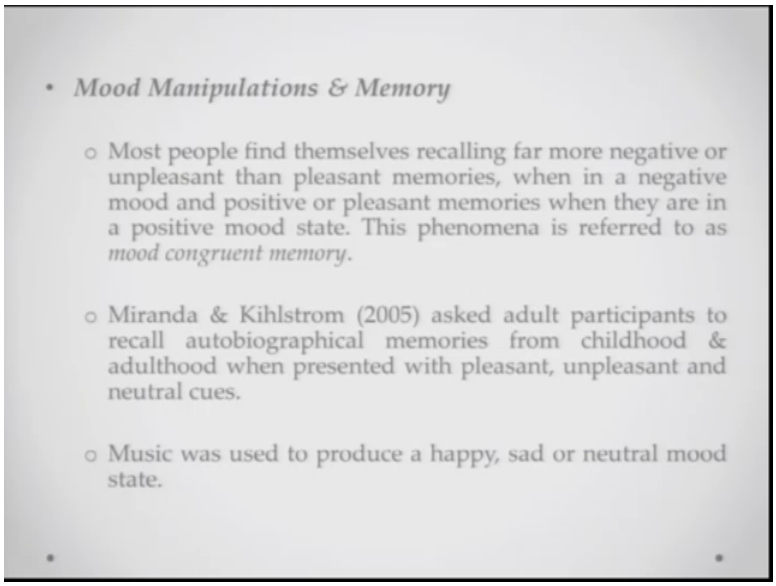

So, we will talk about mood manipulations first we will talk about the first case first, now most people will find themselves recalling far more negative or then pleasant memories if you look back in time and if you see or last 10 years what happened it is highly probable that you will probably remembered more vividly than negative details, I mean the negative events that would have happened as compared to the positive event now when and this is basically something which is like say for example, if you are in a happy state, you will kind of look back and just think of happy memories, when you are in a negative state in your sad or angry or you have just had a fight with somebody you would look back and you will actually find those kind of memories coming back.

So, depending upon whatever emotional state you are those kind of information is what you will activate now this phenomena is referred to as the mood congruent memory the kind of mood you are in the kind of memories you will easily activate I mean this is basically the you know the equation. So, Miranda and Kihlstrom in 2005 they asked adult participants to recall autobiographical memories from childhood and adulthood when presented with pleasant unpleasant and neutral cues and they actually founds that you know they tried to induce this the using a happy sad or a neutral mood as well and what they actually found was they did find evidence of mood congruent.

They did find evidence of mood – congruity, the retrieval of sad memories was facilitated by a sad mood or sad music and that of happy memories was enhanced by happy mood or happy music.

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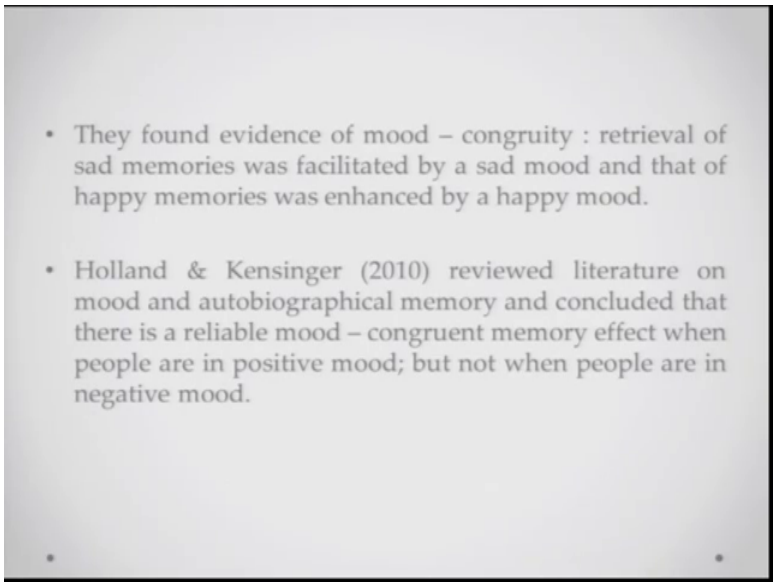

In a different study Holland and Kensinger they reviewed the literature about this mood and autobiographical memory interactions and they basically looked at a lot of studies and they concluded that there is a reliable mood - congruent memory effect for positive emotions while the kind of results the level of confidence on the results is slightly lesser when you are talking about negative mood and then mood congruent memory with respect negative states.

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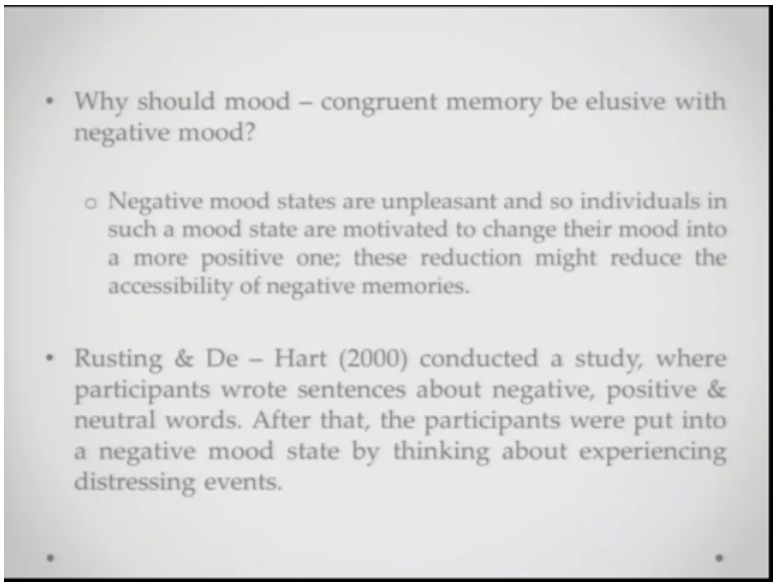

So, why should mood congruent memory you know be elusive with negative memory? I mean somebody can ask that is the, what is happening with the mood congruent memory, here why are negative states not really producing reliant reliable results. So, negative mood states one of the reasons could be that negative mood states are unpleasant and so, individuals in such a mood state are motivated to change the mood to a more positive one they are internally motivated to change this and they are constantly trying to change this mood state and what is happening is because of this tussle going on inside the individual.

The mood state is not really I mean the negative memory is a do not remain as accessible and that is one of the reasons why you will see there the relationship between negative mood states and negative memory being activated is not really as strong as compared to positive mood states because you are trying to maintain the positive mood state while you are trying to kind of come out of the negative mood state is you know. So, the correspondence between negative mood and negative memory is not so high as compared to the correspondence between positive mood state and positive memories activation.

Rusting and De - Hart you know in 2000 they conducted the study where participants wrote sentences about negative positive and neutral words. So, they were given this list of words, some of them were negative words, some of them were positive words, some

of them were neutral words and they were given these you know they were asked to write make sentences, out of this and after that participants were put into a negative mood state by thinking about experiencing distressing events say the kind of you know they have asked.

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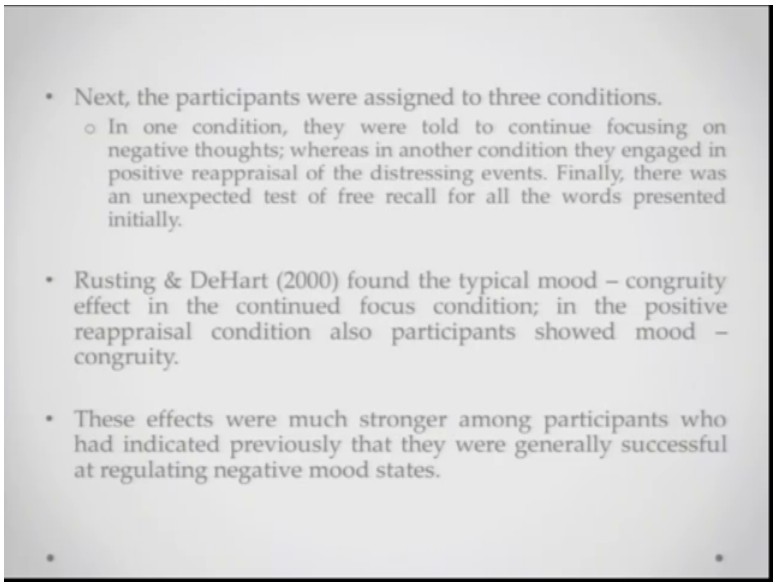

They have been asked to think about whatever bad has happened in your life, just think about it for a while then they assign the participants to three conditions, in one of the conditions they were told to continue focusing on the negative states and in another condition they engage in a positive reappraisal of these distressing events. So, you know this bad event happened and then the person is asking you to reappraise it you know look at it in a different light, you know if this thing is happened it is probably for the good you know something good might have also come out of all the bad things that have happened.

So, the positive reappraisal is there and finally, they were basically put on unexpected test of free recall. So, three things are happening three conditions are there and then what happens is that, Rusting and De Hart 2000 in year 2000 find this typical mood congruity effect in the continued focus conditions when they continue to focus on the negative thoughts in the positive reappraisal condition also the person should mood congruity.

So, they could actually you know get this effects of mood congruity now these effects are; obviously, much stronger among participants who had indicated previously that they

were generally good at regulating and ends regulating these different mood states. So, these people who can regulate mood states performed better and they give better results.

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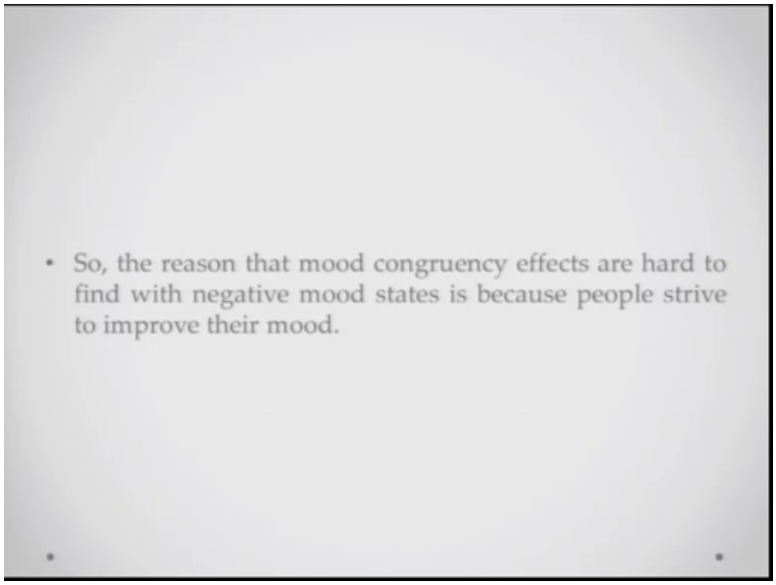

Now, just kind of kind trying to sum this one up the reason that mood congruency effects are hard to find when negative mood states could be because people are constantly trying to improve their mood. So, they are not motivationally interested in maintaining that mood so as who access the negative information who once who really remember negative information you know voluntarily.

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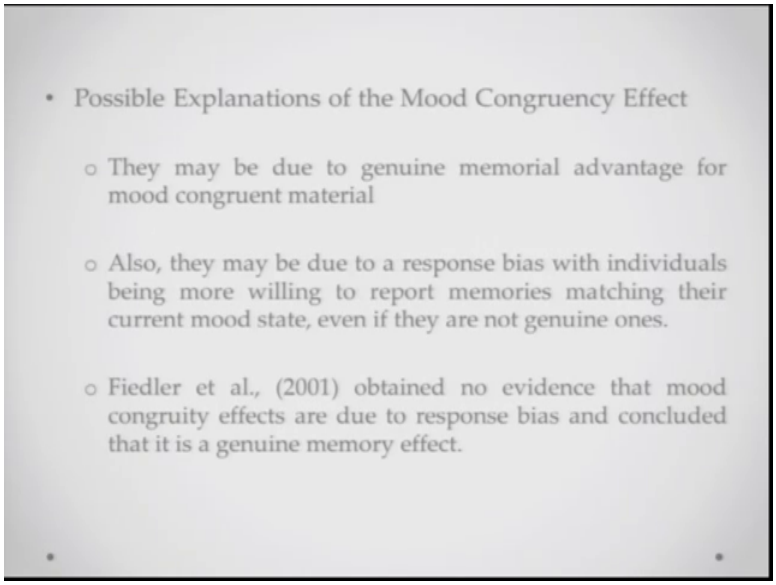

So, what could be the possible explanations of this mood congruency effect, you know these may be due to some genuine material advantage for mood congruent material. So, for example, the material is a relevant also they might be interestingly a response bias with individuals you know being more willing to report memories matching with their current mood state and less willing to talk about something that is say for example, if in a very happy state and somebody asks starts a questioning you about negative things in your life you know you are probably less reluctant you will say I do not remember even an experimental situation.

Say for example, it could be possible that people are not being able to recall and activate because they are not motivated to access that kind of information if you are very angry, if you very sad or depression, somebody comes and tries to you know make you remember the positive things so, the general motivation is not there. Fiedler and colleagues in 2001 they try to the you know work this out and they could not obtain any evidence for mood congruency effects that these mood congruency effects are due to response bias. So, even though that is that is a bit of a possibility, but they did this study and they found that know this was not due to response bias. So, that kind of rules or the response bias based explanation.

Now, let me briefly move on to a different kind of a mood effect and memory this one is referred to as a mood state dependent memory.

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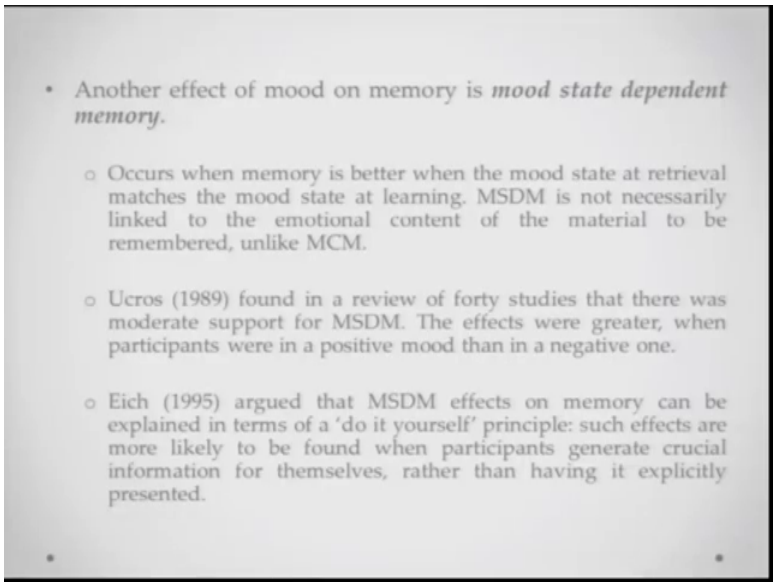

Now, MSDM and referred to this from now onwards, now MSDM is basically the fact that if you have learned particular information in a given mood state if the at the retrieval point and time you are in the same mood you will recall that information better I mean I have kind of discussed these things in the previous course when you were discussing memory in detail, but to just to give you a clue is suppose you are very anxious and you kind of are being told some information.

Next time you are similarly anxious you will be able to recall this information easily another example I often give is say for example, you are having fight with your you know best friend or a wife or partner or something like that and it is very interesting that the next time you remember the things that you spoke to each other would probably be in a similar fight that is going on, you know. So, in if you are in a similar state when you kind of hear things and you are saying things the memory for things is better if the retrieval point your emotional state is a rather similar.

So, Ucros in 1989 reviewed around forty studies and they said that there was a moderate support for the mood state dependent memory, these effects were greater; obviously, for where participants in a positive mood than in a negative one for reasons we have already talked about. Now, Eich in 1985 argued that MSDM effects on memory can be explained in a terms of a do it yourself kind of a principle. So, the idea is that such effects are more likely to be found when participants generate crucial information for themselves rather than having explicitly presented.

So, if you ask participants to generate such kind of memories, that generates their mood of a particular kind your sentence writing or the sentence making or describing kind of mood manipulation techniques then these effects are more reliable you know. So, that is one of the explanations that people have given, moving on to some of the other studies.

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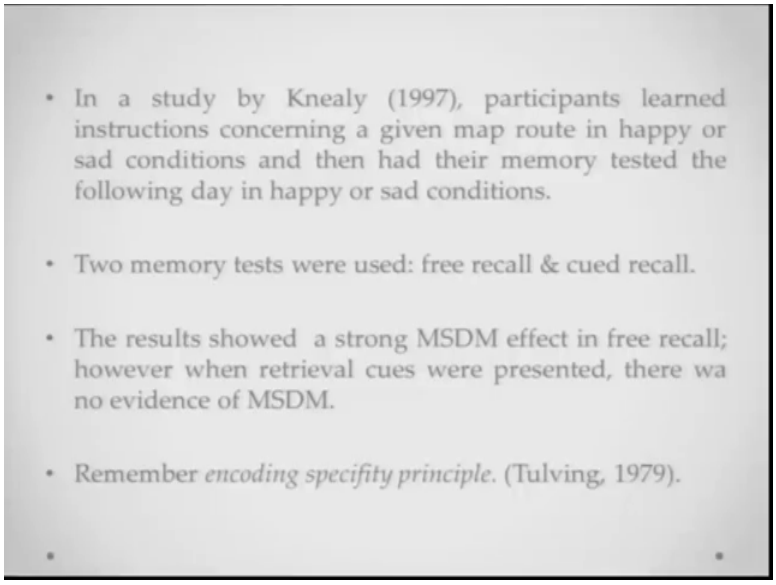

So, Knealy did this study in 1997 and they are in participants learned instructions concerning a given route in happy or a sad conditions and then they had their memory tested in the following day in happy or sad conditions, free recall and cued recall was use free recall is when you just ask participants to say something and cued recall is when you give them some cues the results showed a very strong MSDM effect in free recall; however, when retrieval cues were used there was no evidence of MSDM.

Now, the thing is MSDM or mood state dependence is probably using mood as a retrieval cue, now if you replace that with different retrieval cues you do not really need to go to a moods and that could be one of the reasons why you know the such kind of effects vanish if you are using retrieval cues, you know you remember I have talked about this earlier tulving gave this encoding specificity principle.

If you encode something in a particular manner if you are going to recall it in the same manner that kind of helps that helps your memory that helps the amount of information you can access. So, I think that is all from me about mood attention and mood attention and memory interactions we will continue talking about cognition and emotion in the next lecture of the week.

Thank you.