

**Indian Institute of Technology Kanpur**

**National Programme on Technology Enhanced Learning (NPTEL)**

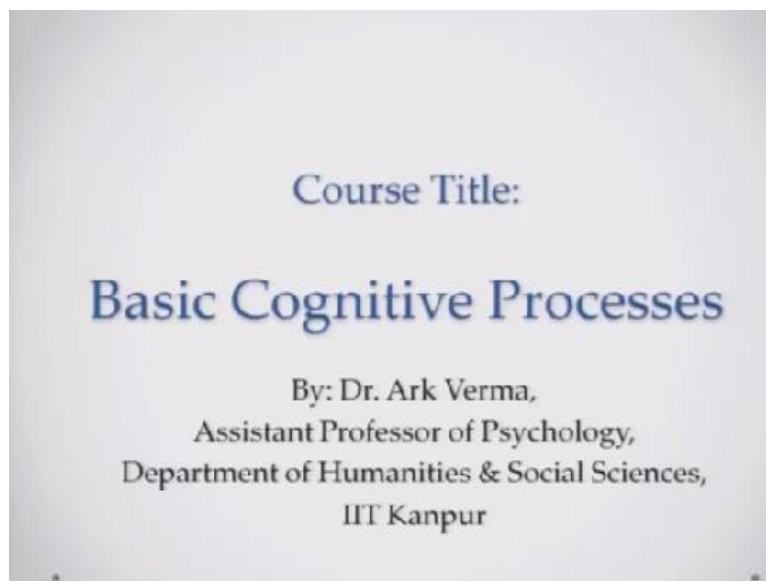
**Course Title  
Basic Cognitive Processes**

**Lecture: 1  
Introduction to Cognitive Psychology**

**by  
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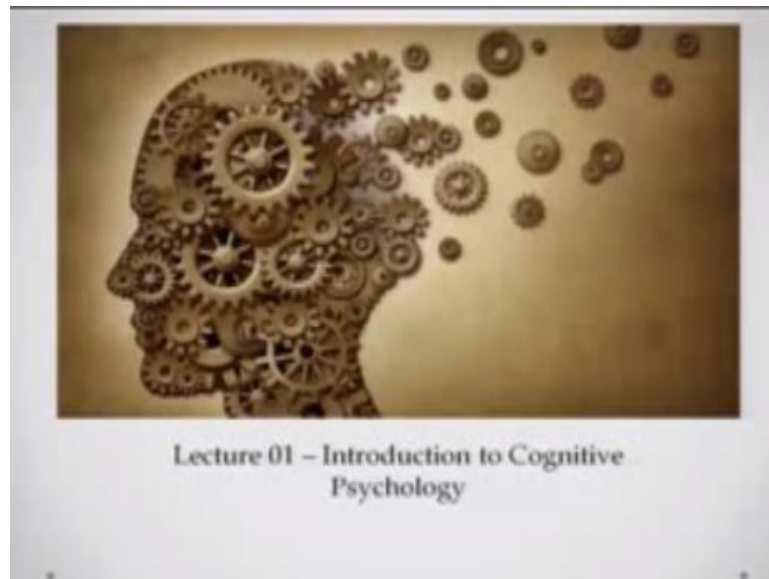
So hello and welcome to this introductory course in cognitive psychology which is titled basic cognitive processes.

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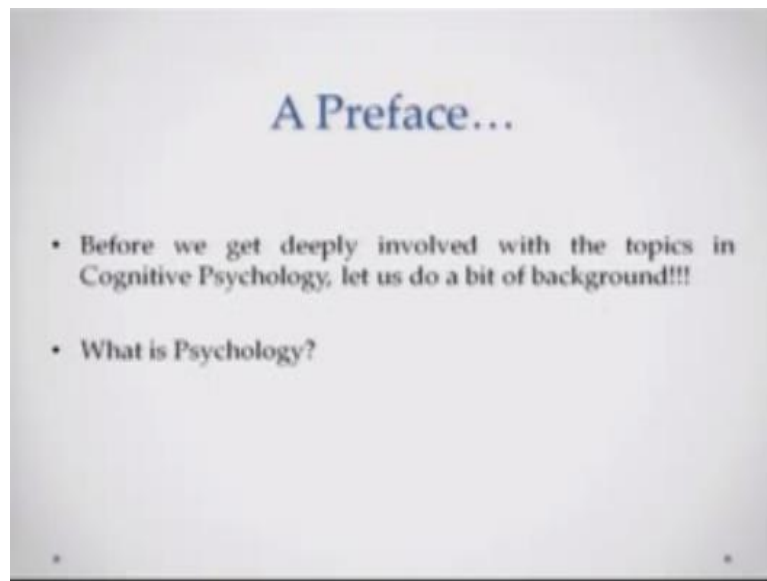
I am Dr. Ark Verma, from the Institute of Technology Kanpur. I am in assistant professor of psychology.

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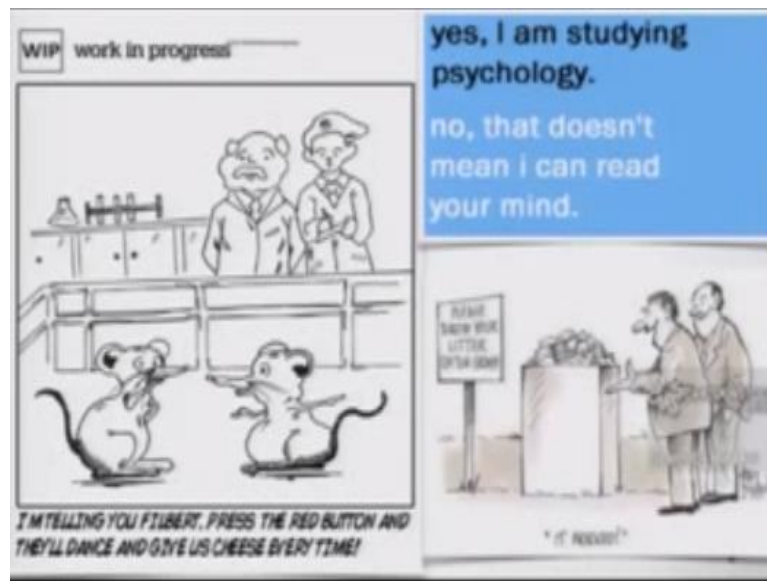
Now today's lecture is titled introduction to cognitive psychology. We will talk about what cognitive psychology is actually about. But before we get deeply involved in the topics in cognitive psychology and what these basic cognitive processes are let us ask more basic questions. The basic question is what is psychology?

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Now should take this question around and you take this question to your colleagues, your family members and people around you. You will actually get a variety of responses. For example, some of them could tell you that psychology is about knowing and predicting peoples behaviours.

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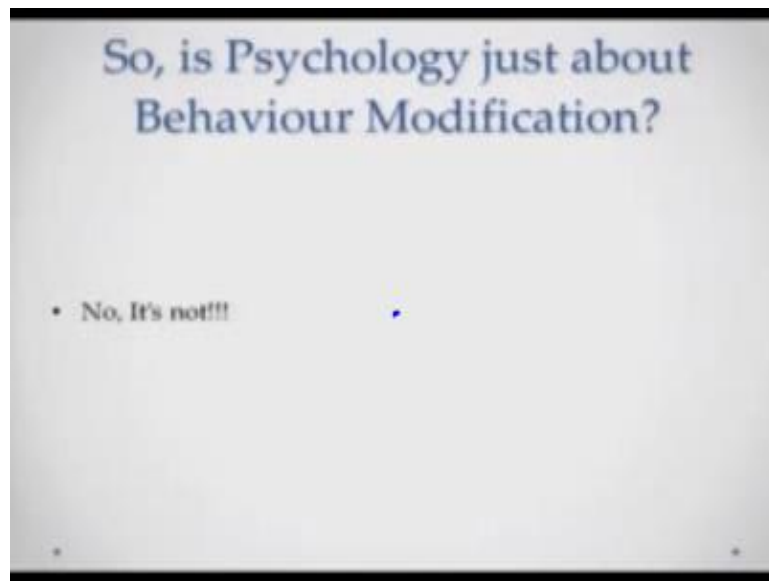


In this comic strip here you might see that both the rat and the lab experimenters are having a sense of controlling each other's behaviour. They seem to know that they are doing something which will actually predict this next person's behaviour. That is one way, another response that a lot of students in psychology get and a lot of students get actually, you know really embraced by this is that a lot of people would come and tell you that psychology is about reading people's mind.

But at some point of the other people would actually go out and say that, 'Yes, I am a student of psychology, but that is not meant that I can read your mind'. Psychology is not really about reading people's mind though it might help you in other ways. One of the last answers about to what a psychology you could get is that psychology could shape people's behaviour in social situations.

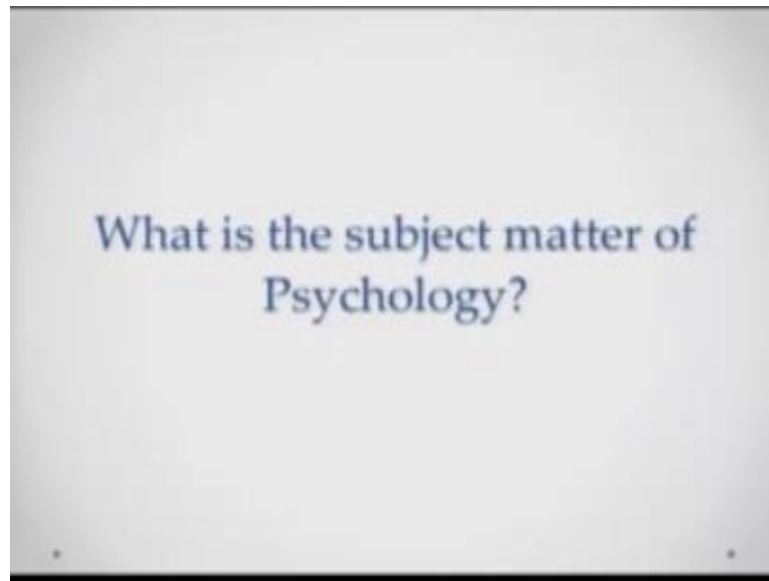
You might see this example here which says in there is a plank advertise says that please through your letter on the ground or on the grass, but it actually gets the exact opposite effect okay. So this is also one of the examples which psychology or one of the applications which psychology has.

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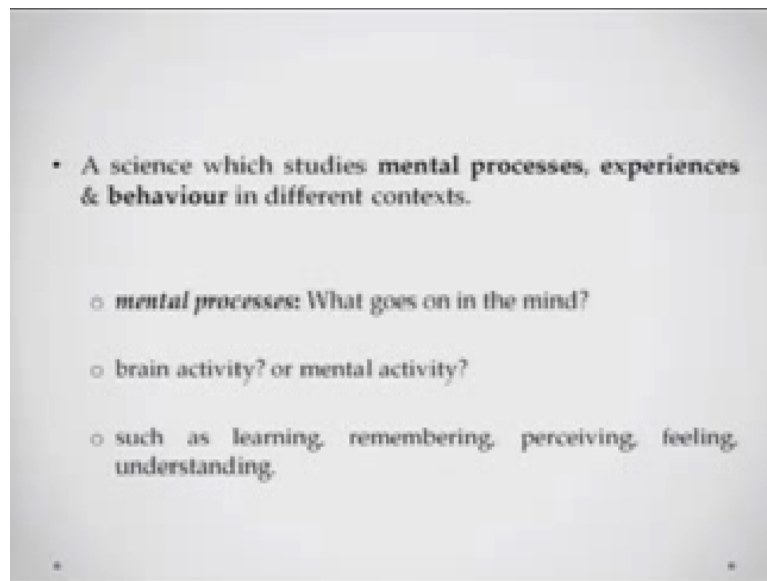
Moving ahead, but if psychology just about behaviour modification I would say no. It actually offers you much more, we will see what.

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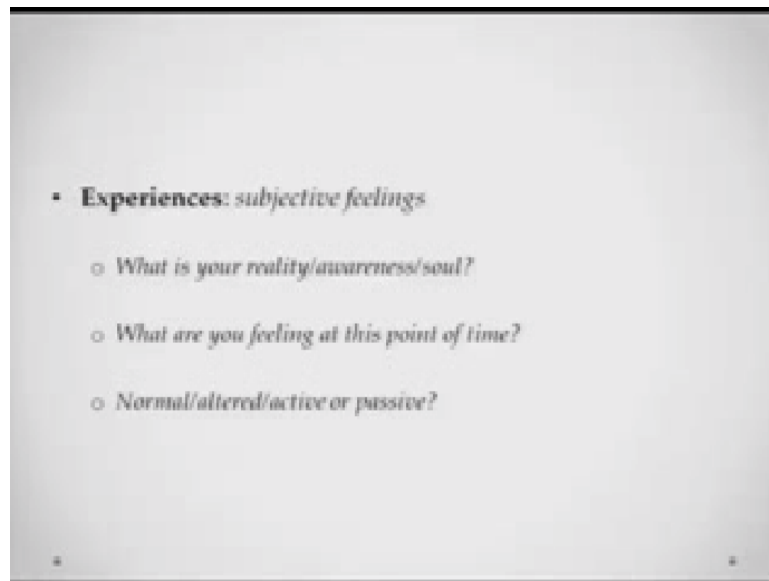
What is the subject matter psychology then.

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Let us begin with the basic definition. Psychology as a science, is a science which studies mental processes, experiences and behaviours in different contexts. We will visit each of these one by one. What are the mental processes we are talking about whether we are talking about just brain activity or mental activity or mental functions. That part is not really clear, but we can take some examples such as learning, remembering, perceiving feeling those kinds of things. Those are also examples of what psychology helps you do or what psychology is actually study.

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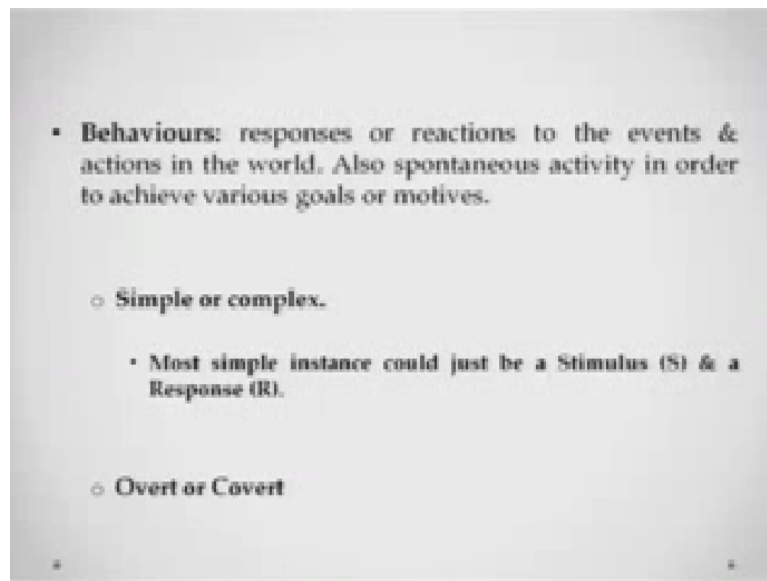


Experiences, what are experiences?. Experiences are subjective feeling, what your feeling at any point in time what is your awareness, let us say for example, I am in this particular room, I see people around me or I see this screen or I am seeing and talking to you guys. Also psychology could actually help you understand experiences whether somebody is experiencing at normal state or an altered state may be in under the influence of a particular drug or something.

Or say for example, very simply put somebodies other energetic or active or someothers may be feeling other passive or sad. All of these comes under the view of psychology.



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Coming to behaviours, what are behaviours? Behaviours most simply put our responses or reactions to the events and actions in the world. You know we are surrounded by agents, we are surrounded by people and situations and how we actually come out acting is basically what is a behaviour. It is an other definition which I am taking here. Also behaviour includes sometimes as spontaneous activity in order to achieve various goals or motives.

You might have a goal of becoming somebody, or you might have a goal of becoming a cricketer, you will continue and you will have some behaviour which will lead on to you becoming a cricketer. All of that also forms part of what is called behaviour. Behaviours conclude in two ways. One of the way is either simple or complex behaviour, what is the simple behaviour.

Simple behaviour is say for example the most typical stimulus and reactions. Say for example, if I ask you to touch the tip of a needle, you will probably trying to touch it, but you will take your hand back very quickly. It is in response to you being pricked. On the other hand, I could actually give you more complex behaviour that being I could ask you to go in make a cup of coffee for me.

That is basically a complex behaviour which will actually involve a chain of very simple behaviours. Another way in which you can actually look at behaviour is whether behaviour


is covert or coward. Coward behaviour is simply is the behaviour that can be observed by others the actions let you do the things which you say or say for example, the stage that you experience and which you show people. That is coward behaviour.

Covert behaviour on the other hand is something that is typically going on in your mind thinks that you would experiencing feeling of attraction, feelings of anger, discusting all of that or say for example, simply processing the world around you. All of that processing is happening inside your head that is an example of covert behaviour.

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### Is Psychology a Science or just Common Sense?

- Common sense has problems!!!
  - E.g. Confirmation biases, stereotypes, availability heuristics etc.
- So, probably not common sense!



Moving ahead, this is other commonly ask question whether psychology is a science or it is just about common sense. We get ask this questions a lot of times. Now if psychology were to be common sense, it would be found with the few problems. Say for example, confirmation bias.

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Now one of the ways in which you can describe a confirmation bias is that it is your internal yes man. If you say for example, develop a particular opinion or a theory about something in the world some person which you know, you will actually look for and collect evidence that agrees with your perspective or that agrees with your point of view. That basically is a confirmation bias okay.

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## Is Psychology a Science or just Common Sense?

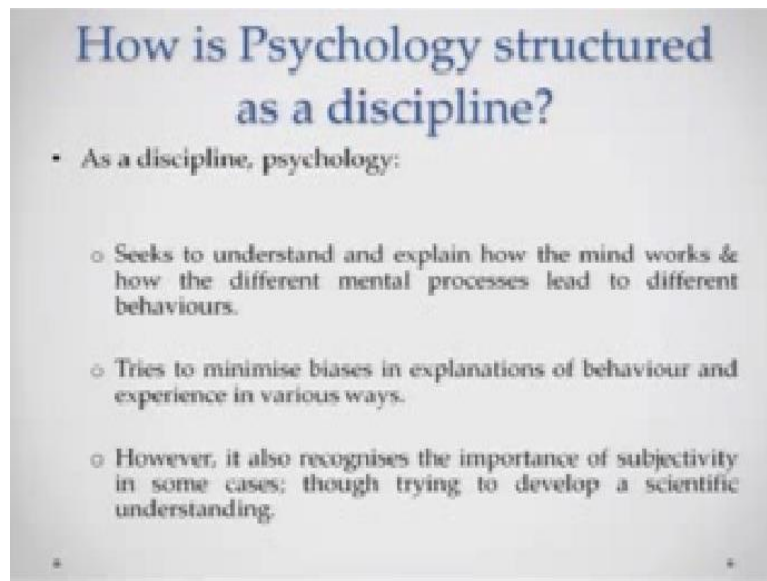
- Common sense has problems!!!
  - E.g. Confirmation biases, stereotypes, availability heuristics etc.
- So, probably not common sense!



Another problem with the common sense is basically stereotypes. Say for example, people have particular opinions and actually look at the world through those opinions. Say for example, most common stereotype that you might have heard or come across of few times is the aspect of, is for example the fact that females are bad drivers. This is all the most common stereotypes that you will hear.

So for example, if somebody comes and tells you that there has been an accident near your house and there was a woman involved automatically some of you will make the conclusion that the woman must be at fault in this accident. However, close examination and scientific observation might tell you that this might not be the case. So psychology in that sense is slightly different from common sense. I would say much different from common sense actually okay.

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Moving ahead, let us talk about how psychology is actually structured as a discipline. As a discipline basically psychology seeks to understand and explain how the mind works and how the different mental processes lead to different behaviours. Psychology trace also in that sense to minimize bias and the explanation of behaviour and experience in a variety of ways. You say that how psychology is different from common sense in the last slide. However, psychology also recognises the importance of subjectivity in some cases, though always trying to develop a scientific understanding of those phenomena.

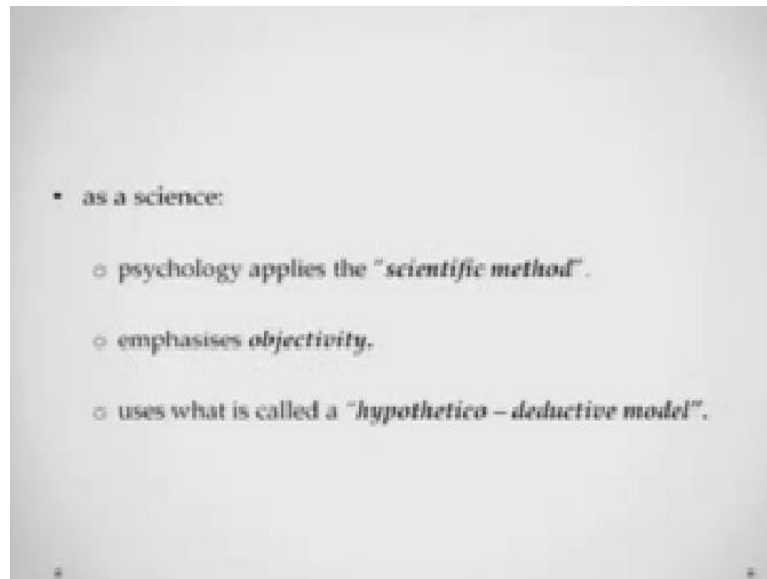
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- Most notably, psychology draws from two streams of knowledge:
  - one, which makes use of the methods in physical & biological sciences and the other which uses the methods in social & cultural sciences in studying a variety of psychosocial phenomena.
  - in the first case, psychology focuses largely on biological principles to explain human behaviour.
  - in the other case, psychology focuses on how behavioural phenomena can be explained in terms of the interaction that takes place between the person & the social context.

So psychology basically draws from two streams of knowledge. One which makes use of methods in physical and biological sciences and the other which uses methods of social and cultural sciences while studying a variety of psychosocial phenomena. In the first case, psychology focuses largely on biological principles to explain human behaviour, things like how is the brain function, what is the response to various neurotransmitters in the brain, and stuff like that.

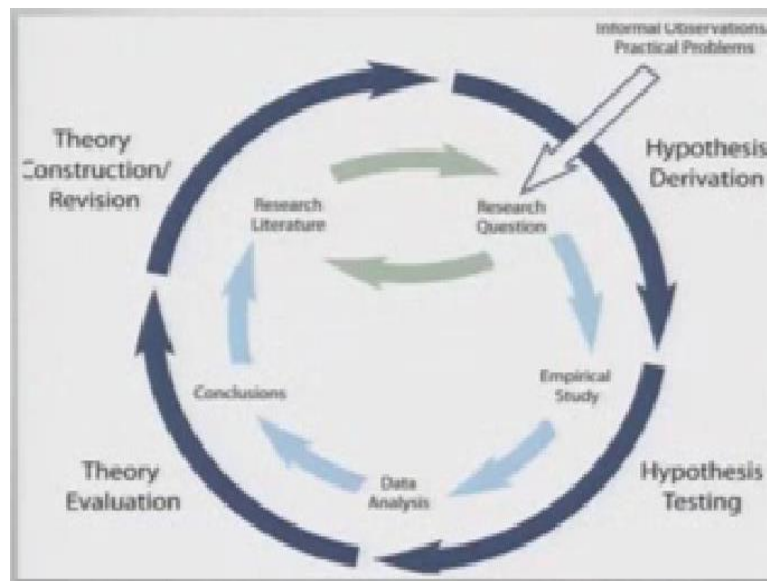
On the other hand, psychology focuses on how behavioural phenomena can be explained in terms of the interaction that takes place between the person and the social context, how is the person behaving when he is alone, or compare to how does the person behave any when he is confronted with the group of people when he is part of a larger group. Those kind of phenomena.

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As a science psychology applies what is called the scientific method? It emphasizes objectivity it emphasizes that your opinion should be based on facts, your opinion should be based on measurements that basically which is called empiricism. In it is go psychology uses of particular method or it basically functions around a particular model which has been called the hypothetic deductive model.

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So let us have a look at this model for a while, this is what this model looks like. It is basically begins with some kind of literature review, you actually look into literature, you actually see what are the questions people will ask you, actually look to see what are the papers people of publish. What are the topics that people have been interested in studying and to what extent they have actually studied of them?

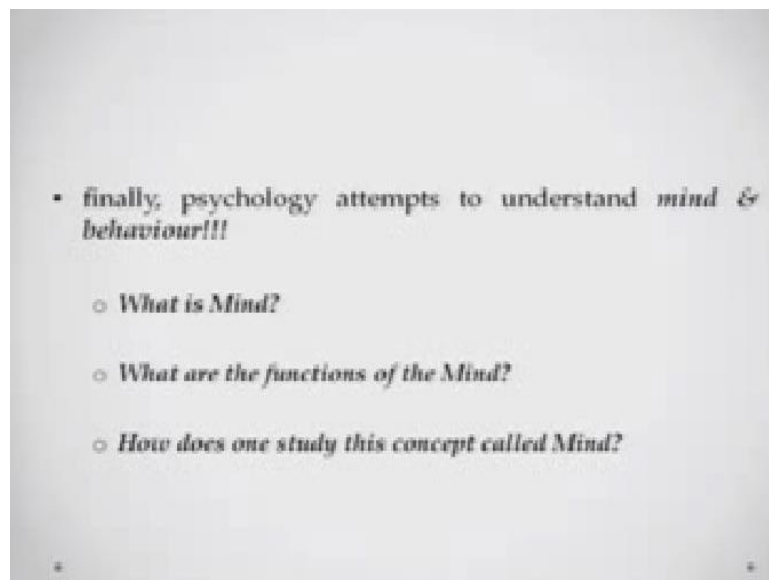
What are the questions relevant to those topics and how people have approach those questions. Then basically move on to formulating your own research questions on the basis of whatever literature you actually started. You move on to design in empirical study is it could be an observation study or it could be basic experiment we will talk about these things later as we go on into the course.

And then when once you conduct an experiment you gets some data, you get some measurements. You analyse those data, you analyze that data and basically that helps you reach particular conclusions. Once you reach a particular conclusion now you also have to says something about that particular topic. This then gets added to this body of research literature which people coming up to you might again, review to contact their own research questions.



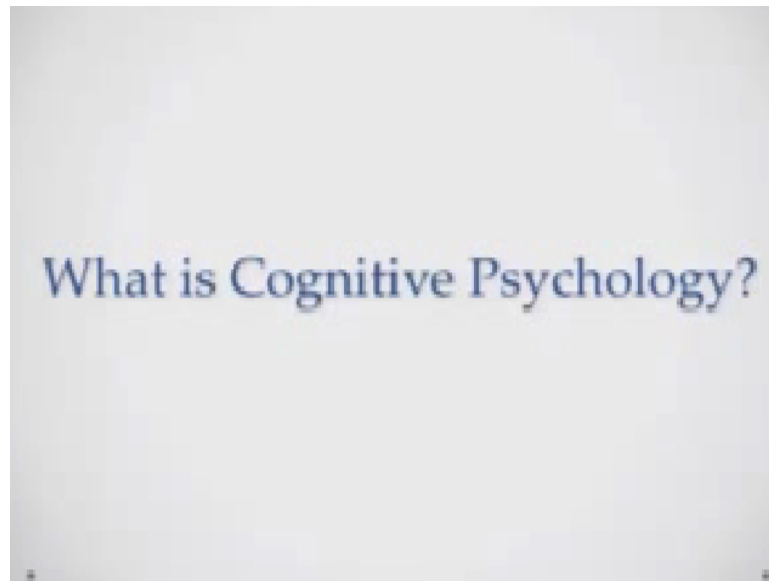
That is what psychology broadly uses as a method when we move on we actually talk about these kind of methods in more detail. Finally let us talk about what psychology attempts to understand.

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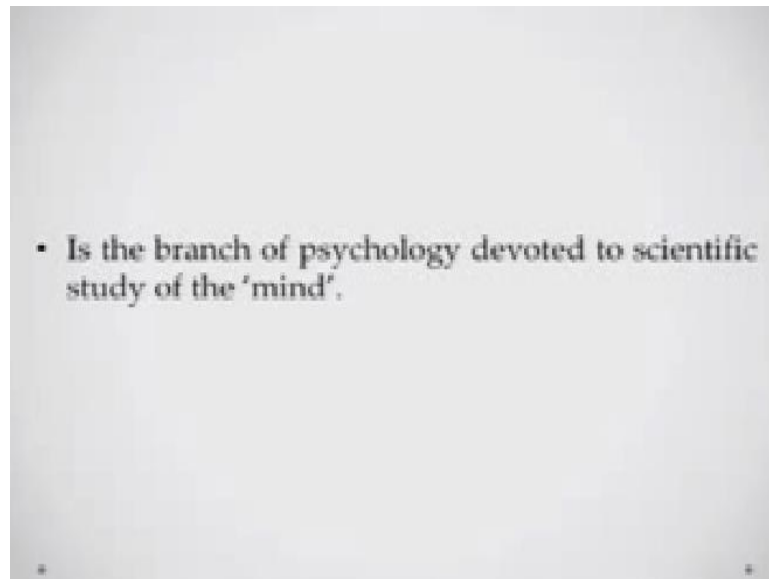
So psychology basically attempts to understand two things, mind and behaviour and basically the questions in psychology which are asked around this dichotomy, what is mind, what is behaviour okay. Let us kind of take a bit of a person ask these questions what is mind or what are the functions of the mind or how does one really studied his concept called mind. This probably are these three questions basically form the core of the topic or core of the topics in cognitive psychology that we will be focusing in this course.

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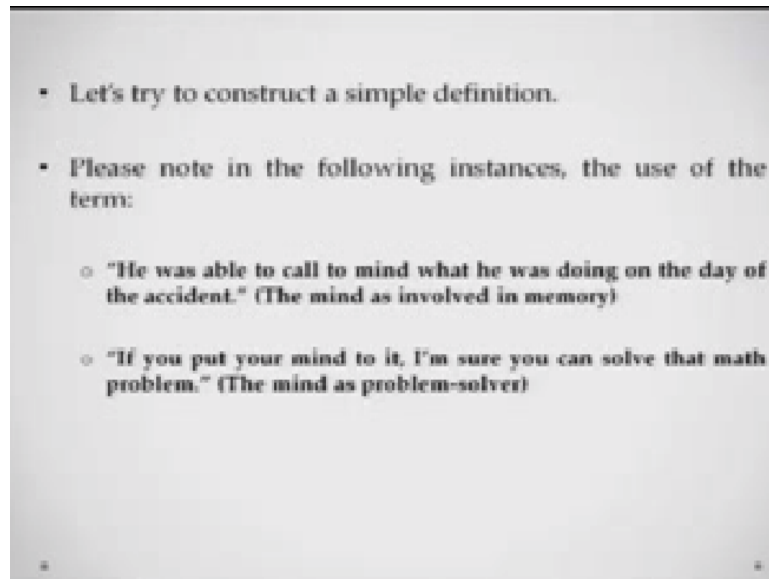
So let us move from here and let us ask a question like what is cognitive psychology? What are you going to study in this course? What am I going to talk about in the coming lectures?.

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Now cognitive psychology basically is been simply defined as a science is basically defined as a branch of psychology which is devoted to the scientific study of the mind okay. What is mind? You remember we ask this question. So let us actually move on, you know to a simple definition. Let us try in construct a simple definition of what is mind.

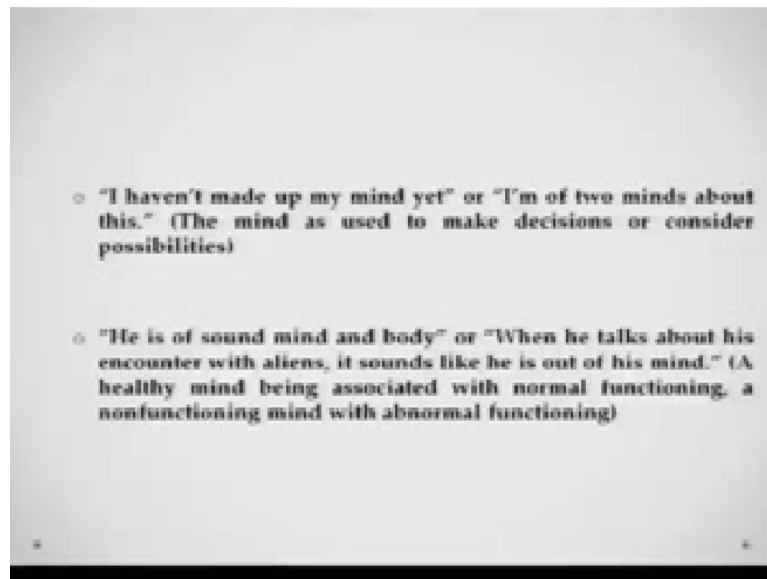
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Please note the following instances, the use of this term called mind. I will take out I will actually says some sentences, one of them say for example, he was able to call to mind, what he was doing on the day of the accident. In this sentence you see that the person is referring to mind as memory. You know the person is actually if trying to bring to mind or recall what is involved in that particular accident.

Let us take the second sentence, if you put your mind to it, I am sure you can solve that maths problem. In this case you see the person is actually taking mind as a problem solver. So the mind must be able to help you solve particular problems, the mind must be able to help you take particular decisions, have a particular algorithm take particular steps and then reach a final goal.

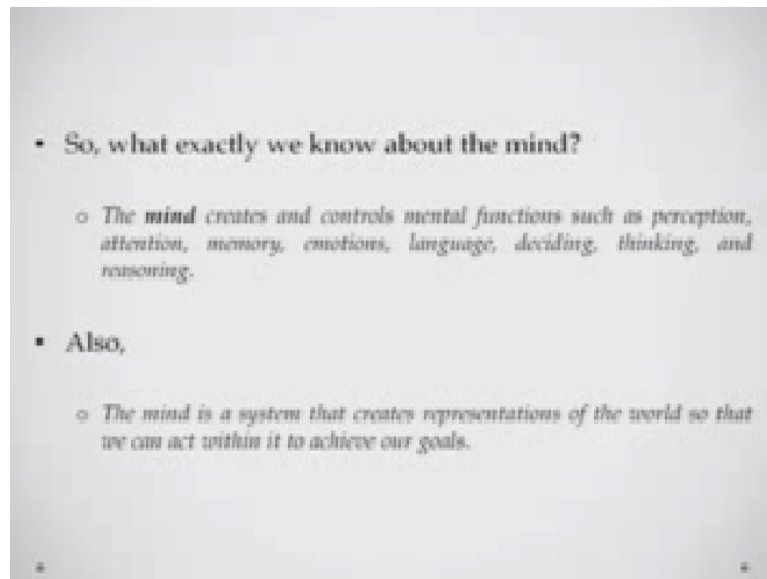
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Moving on, I have not made up my mind yet, say for example I am of two minds about this. This is basically again an instance in which mind is being used to make decisions or consider or evaluate possibilities okay. So this is again one of the functions of the mind. Another sentence here could be he is off sound, mind and body or when he talks about his encounter with aliens, it seems like he is out of his mind okay.

Here you can see that the sense is that healthy mind is being associated with normal functioning and non-functioning is being associated with abnormal functioning. Now these are two different things parts of which we will definitely touch in the scores, but to tell you that basically the mind then it means something which is capable of taking good decisions or say something which helps to straight connected with the reality okay. So what exactly then we know about mind.

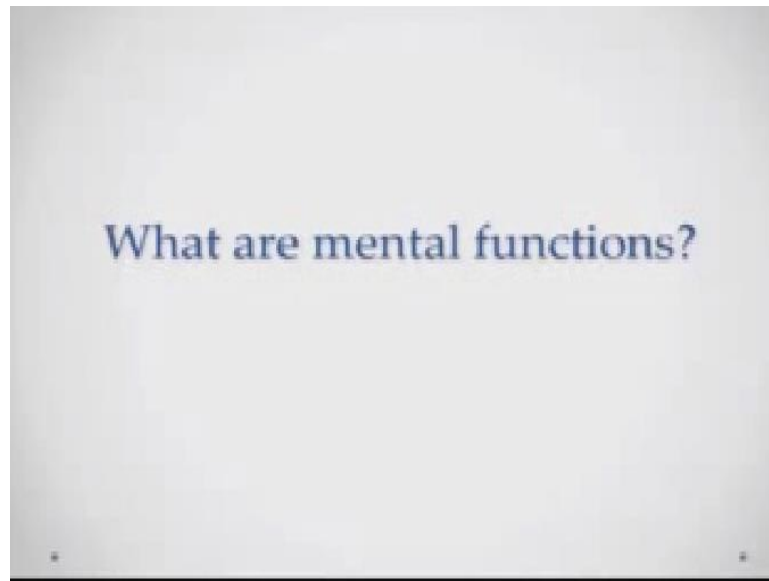
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Let us on the bases of the statement we actually heard let us train in construct a basic definition of mind. A simple definition would be the mind creates and controls mental functions such as perception, attention memory, emotions, language, deciding, thinking, and reasoning. Now all of these terms basically are different mental functions which we will talk about in more detail in the coming lectures.

Also you can look at into the mind as a system that creates representations of the world. So that we can act within it to achieve our particular goals. So mind is also motivated resorts okay. You will probably touch this definition as well when we are going to the further lectures.

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We talked about these different mental functions, so let us ask what these different mental functions are. To understand what these different mental functions are let me take you to a practical example okay. So take a moment read what is here and analysed to be did along with you.

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So as Raphael is walking across the campus talking to Susan on his cell phone about meeting at the student union later this afternoon, he remembers that he left the book that she had lent him at home. I cannot believe it he thinks, I can see it sitting there on my desk, where I left it. I should have put it in my backpack last night when I was thinking about it.

As he finishes his call with Susan and makes a mental note to be on time for their appointment, his thoughts shift to how he is going to survive after Wednesday when his car is scheduled to go into the shop. Rending a car offers the most mobility, but is expensive. Bumming rides from his roommate is cheap, but is rather limiting. Perhaps if he pick up a bus schedule at the student union, he thinks, as he puts his cell phone back in the pocket.

Entering his anthropology class, he remembers that an exam is coming up soon. Unfortunately, he still has a lot of reading to do, so he decides that they would not be able to take Susan to the movies tonight as they had already planned. Because he needs time to study, as a lecture beings, Raphael is anticipating, with some anxiety his meeting with Susan. And how he is going to tell her about this decision.

Now you see this is a description of a lot of small little thinks which are happening at one particular moment in somebody's mind. You can actually put yourself in the situation at any point in time or throughout the day you can pick up yourself and just examine one such



instance you will realise that at one particular point in time a lot of different things are going on through your mind. So let us try and see what all is happening here, what all the mental functions are taking place.

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This is the figure of what different things Raphael is doing as he is walking across the campus, so we will see that is understanding conversation, because he is on the phone. He is visualizing his book on the desk which he left, he is thinking that he has to be on time for the appointment may be because that will lead complications. He is also remembering Susan's book. By the way he is walking in the campus.

So he is actually presume the campusing as well as to avoid bumping into people and falling off also you saw that he was thinking about his car problem. So he is doing variety of thinks, he is doing, he is basically engaged and we called complex behaviour at this point in time. So what all is Raphael doing actually let us boil out to that.

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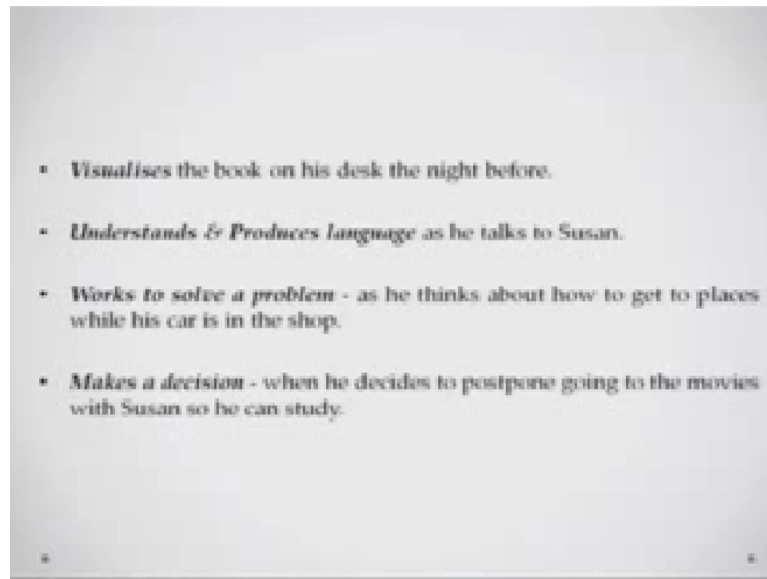
- So, what all is Raphael doing?
- *Perceives his environment* - seeing people on campus walking around, hearing Susan talking on phone.
- *Pays attention* - to one thing after another - the person approaching his left, what Susan is saying, how much time is left for class.
- *Remembers* - something from the past - that he had told Susan, he was going to return her book today.
- *Distinguishes items in a category* - when he thinks about different possible forms of transportation - rental car, roommate's car, bus.

He is presuming his environment, he is basically seeing people on campus walking. He is also listening to Susan talking on the phone. He is paying attention to one thing after the other person approaching is left what Susan is saying and how much he is left for the class. So he is actually paying attention to these different facts at the same time while he is involved in this conversation on the phone.

Also Raphael is remembering, he is remembering things from the past that he told Susan that he was going to return her book today, he is thinking of how he will get the book back or say for example, how he is left the book on his table. Those kinds of things he is actually going through in his memory. He is also doing something interesting, he is distinguishing different items in a category.

When he thinks about different possible forms of transportation, so he actually is comparing these possibilities whether he should take a rental car, whether he should to take help get a ride with his roommate or say for example, he should go with the bus. He is actually also evaluating possibilities in here also he is visualizing.

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- 
- *Visualises the book on his desk the night before.*
  - *Understands & Produces language as he talks to Susan.*
  - *Works to solve a problem - as he thinks about how to get to places while his car is in the shop.*
  - *Makes a decision - when he decides to postpone going to the movies with Susan so he can study.*

He is basically thinking of where he had left the book on his desk, he can actually see okay I left the book there, I am just forgot to keep it in my backpack while I slept in the last night. He is understanding and producing language something very complex is actually thinking to himself understanding what Susan is saying and also answering her back. So he is doing these three things at the same point in time.

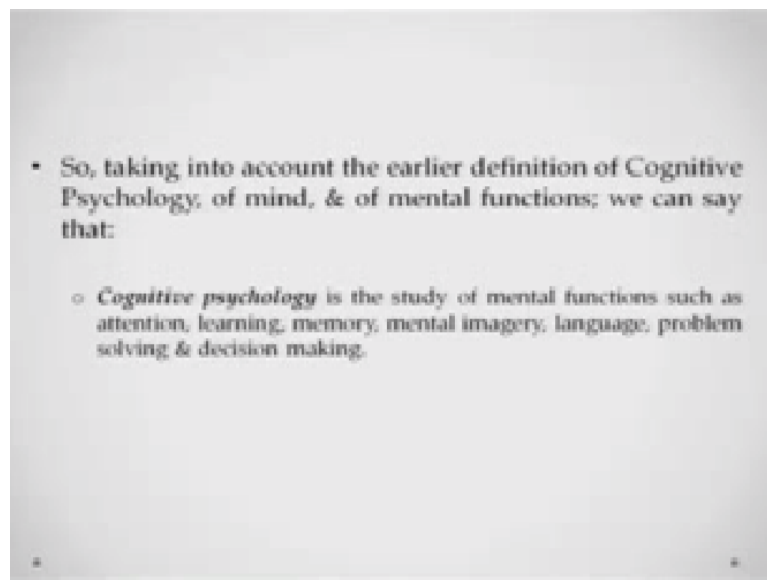
He is understanding whatever Susan saying, whatever he is thinking and also he is actually producing language why talking about to Susan. Also you saw that Raphael is working to solve a problem as he thinks about how do get to places while he is car is in the shop. He actually has a problem attend and while to conversation is definitely going on, he also needs to evaluate these different possibilities.

Finally he actually comes to a decision, so decision making is also involved here. He decides to postpone and he is going to the movies with Susan tonight, because he has to prepare for the exam that is going to come afterwards. So you will see in a particular moment in time, we are involved in a variety of mental functions. We are involved in variety of these different decisions we have to take, we are also doing a lot of things at the same point in time. While you watching this lecture on your laptop or your computer, you are actually doing the same thing as probably Raphael is doing in this particular example.

You are remembering something, you are pursuing the video you are listening to the audio trying to understand what I am saying also thinking to yourself, you were also making decisions on whether say for example, to continue where you like the course or whether you do not like it. Those different kinds of things you are doing at this same moment. This basically is what is the crux cognitive psychology. This is basically what we are going to study in the coming lectures.

So if this interest you it mind actually help to hang on. Now let us come to the end, let us try and talk about whether and what cognitive psychology actually does. Let us taking to account the earlier definition of what cognitive psychology is. The definition of what mind is and the definition of mental functions and we can conclude that cognitive psychology is the study of mental functions okay.

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Is the study of mental functions for example, attention, learning, memory, visualization or mental imagery, it is a study of language, it is a study of problem solving when you have a problem at hand. And it is also the study of decision making okay. So in cognitive psychology these are the different topics, these are basically the names of the different chapters actually we are starting in more and more detail okay.

Each of these are specific cognitive functions and we will actually look into how do we study these different cognitive functions, what are the different ways of understanding these cognitive functions and so on. So with this in mind we will actually go on to the next lecture in a next time which is basically going to be about history of cognitive psychology. We will talk about what is the history of the thought which basically cavern cognitive psychology.

We will actually look into a bit of history of psychology, how psychology develop from philosophy. We will also look into how cognitive psychology or this cognitive with perspective or psychology emerge from the earlier schools of psychology. That is all we will see you in the next class.

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