

Psychology of Personality and Individual Differences: Theory and Applications

Professor Dilwar Hussain

Department of Humanities and Social Sciences

Indian Institute of Technology, Guwahati

Week 6

Lecture 12: Behaviourism and Personality 1: Classical conditioning and personality

I welcome you all to module 6 of this course. So module 6 is about behaviourism and learning perspective and how this perspective explains human personality. So, this module has two lectures. Today, we will have the first lecture, lecture number 12. So this is the first part of this module, which talks about how behaviourism is connected to the concept of personality.

In this lecture, we will more explicitly talk about classical conditioning and how it connects to personality. So, before discussing today's lecture, we will briefly recap the last lecture we discussed. So, the previous lecture was lecture number 11, which was part of psychoanalysis. In the second part of psychoanalysis, the lecture included psychoanalysis-related concepts. In that lecture, we discussed the idea of anxiety and how the ego part of our personality deals with anxiety, particularly by using defence mechanisms.

So, we discussed the diverse defence mechanisms or strategies that people use in day-to-day functioning in terms of, you know, coping with anxiety and stressful situations. We also discussed psychosexual stages of development as proposed by Sigmund Freud, where we talked about the different stages that Freud talked about from birth of a child to adolescence, the different stages that we talked about and what are the characteristics, what are the possibilities of fixation into the different stages and how this fixation could impact the adult personalities and so on. We also discussed the various criticisms associated with psychoanalysis as psychoanalysis has a considerable impact and popularity in terms of the theory not only just within psychology but even beyond psychology, but this theory has also invited a lot of criticism because of the methodology it uses and various controversial concepts. In the end, we also discussed the idea of Neo-Freudians, where we talked about a group of disciples who were once followers of Freud, but they later departed and kind of extended Freud's theories. There are a few more additions that they did in the psychoanalysis.

So they are called as Neo-Freudians, and we discussed some of the basic ideas of all Neo-Freudians. We have not looked into specific theories of Neo-Freudians. So, these are the

few things we discussed in the last lecture. So, today, we will be talking about, as we have already said that you know this is a new model. We will discuss the concept of behaviourism and learning perspective and how it connects to personality. And more specifically, today, we will be talking about Pavlov's theory of classical conditioning.

We will understand the basic principles of classical conditioning and see how this can be connected to the concept of personality and some of the therapies popular in the behavioural tradition. So, let us start today's lecture. So school of behaviourism was very dominant in the initial 20th century. This approach challenged some of the existing principles of many personality theories. If you look at trait theories and other theories we discussed or some of the theories we will discuss after this module.

Most of these theories talk about some internal traits, the existence of internal characteristics, tendencies, defences, and motivations within the human personality and the human system. Behaviourism, as a school of thought, they were not at all interested in the internal conflicts and dynamics of human beings. They are more interested in how environmental factors shape human behaviour. So, they are entirely focusing on the behavioural part of it, how external factors influence our behaviour. Because they said, you know, to be, you know, genuinely scientific investigation should only focus on visible aspects that can be measured in the outside world.

So, they are focusing only mainly on the factors which are, which are, which influence human behaviour, particularly environmental factors. So, behaviourists argue that internal concepts are irrelevant. So, they did not completely deny the existence of such factors, but they said these are not necessary to explain human behaviours and personality. We can explain human behaviour from the impact of the environment on human behaviour and the effect of stimulus from the outside. So, they believe that individuals are entirely shaped by their environments and that behaviour is determined by external stimuli and reinforcement rather than by internal processes.

So, their focus was more on external factors and how the kind of environment that we live in shapes our behaviour and our personality, and not at all focusing on internal factors. So, behaviourism as a school of thought in psychology was very scientific in its approach. And they are very different from the other personality theories, which typically focus on internal factors and other things. Their main focus was how to study and measure very precisely scientifically and that kind of thing. So, behaviourism's approach, measurement, and methodology were strictly scientific, and this particular characteristic separated them from

many other schools of thought. So, one of the assumptions of behaviourism is that one of the first assumptions is that behaviour should be explained by the causal influence of the environment on the person. Every behaviour the causes of different behaviours, can be located in the environment or the outside situations and should be explained by those causal factors in the outside environment. Suppose you see a lot of other theories like psychoanalysis that we discussed in the last module. In that case, they focus exclusively on the internal factors and not just typical internal factors but also on the unconscious aspects of the mind.

So focus was completely different. So, behaviourists emphasise the role of external environmental factors in determining behaviour. So, this is one of the basic assumptions of this school of thought. Second is that understanding of people should be based entirely on controlled laboratory research which can involve both humans and animals. So, behaviourists were very much focused on the methodology part, and they were primarily interested in laboratory research, proper experimental research and finding out the causes and the factors responsible for behaviour.

What are the factors that determine behaviour? They also used a lot of animal studies in their approach, then generalised animal models to human models. So many of the basic behaviours they said could also be understood from the animal behaviour. So, if you look at the other personality theories, they predominantly studied human subjects. Most of the different paradigms did not study animals.

Behaviourism often builds its theories on animal research using strategies shared in the science of studying simple systems of animals. So they started with the simple systems of animals, how they learn and then they moved into explaining human behaviour. So, these are two significant characteristics of behaviourism as a school of thought That differentiate this school of thought from all the other schools of thought and the theories of personality.

So, today, we will discuss one particular approach within behaviourism: classical conditioning. So, it is a part of the behaviourist school of thought, one specific learning paradigm called classical conditioning. This particular paradigm was kind of, you know, developed or founded. This individual's father, the concept of the classical condition, is one of the Russian physiologists Ivan Pavlov. Pavlov studied animals, particularly dogs and their behaviour, and accidentally, actually, you know, he was doing research with the dogs and the physiological systems of the dogs, and accidentally, he came up and found

this concept of classical conditioning, which is in the domains of behaviour. So, we will see this concept of classical conditioning and how it relates to personality.

So, the classical conditioning is it is a process of learning. So, we learn in various ways as humans or animals understand many things you know. So, there are many ways we can learn things. One of the ways we learn things, including animals, is through classical conditioning. So, what is this classical conditioning all about?

So, it is a fundamental learning process first described by Ivan Pavlov, which involves forming an association between stimuli and response. So, how do we learn here? We learn here by associating two things. One is stimulus, and the response is whatever response we respond to a stimulus. So, there is a stimulus, and there is a response.

We learn many things by associating them together. So, we will also try to understand many examples of this condition. So a lot of our learnings are learning by association. So we connect two things, one with the other, and whenever one comes, we predict that the other will also go because they always come together. So this learning by the association of two things and particularly in this context, stimuli and response is typical, you know, the paradigm of classical conditioning is all about.

So, here are some key terms we should understand before we explain the experiment that Ivan Pavlov did, which led to the concept of classical conditioning. So, we need to understand a few basic terms. So, one term we should realise is an unconditioned stimulus. So, the unconditioned stimulus is natural and automatically triggers a response without prior learning. So, any stimulus presented to a subject will automatically trigger a response.

So, that is the means unconditioned. So, there is no need for a condition. It is a natural stimulus. Whenever it is presented, there will be a natural response to that. So, if you show that stimulus, there will be a natural response to this. So, such stimuli are called as an unconditioned stimulus.

For example, we will be giving examples in the case of a dog because the experiment is with the dog, so we will understand and connect with the experiment much better. For example, if you present food or, let us say, in the case of a dog, it is a meat or meat powder. It will naturally cause the dog to salivate. So, dog, if you present any food that a dog likes, that is a meat powder or something like that, it will automatically salivate, or saliva will come out of the mouth of the dog.

So, it is a natural response. So, the presence of the food stimulates a reaction in the dog, that is, the stimulation of saliva in the mouth. Okay? So, it is an unconditional stimulus. What is unconditional stimulus here?

Food. Food is an unconditional stimulus in the context of the setting of a dog. So, this is one concept. So, it is a natural triggering response. Any stimuli that naturally automatically trigger some response.

So, that is an unconditional stimulus. Next comes a neutral stimulus. A neutral stimulus is any stimulus that initially does not trigger any particular response. So, if we call a stimulus a neutral response, it will not stimulate any response. So, if you present a neutral stimulus, it will not impact or stimulate any response.

So then it is called as a neutral stimulus. So, in the context of a dog, let us say so because we are giving examples in the context of the dog so that we will carry on with the same example. So let us say if you present the sound of a bell or let us say we light a bulb, generally, the dog will not respond in any specific ways. You know the sound of a bell; let us say it is not too loud. If you present some sound, the dog will not impact the dog, so the dog will not respond in any particular way because it does not cause any response. So, in this case, the sound of a bell will be a neutral stimulus.

So, one is an unconditioned stimulus; one is a neutral stimulus. Then comes the third category of stimulus called as conditioned stimulus. Now, conditioned stimulus happens only when after the association of two things. So, what happens? Whenever a neutral stimulus occurs,

Previously neutral because it was not stimulating any response. So, it was a neutral stimulus in the natural setting. The neutral stimulus triggers a conditioned response when repeatedly paired or associated with an unconditional stimulus. So, a neutral stimulus generally will not stimulate any response. But when this stimulus is associated with an unconditional stimulus, in this case we discussed food.

So when a neutral stimulus, in this case, what we discussed, is the sound of a bell, let us say when the sound of a bell is associated with food and presented. So sound of a bell, food, and after the sound of a bell, food is given to the dog. So what is happening here? A neutral stimulus is paired with an unconditional stimulus.

Because when food is presented, the dog will respond in terms of producing saliva in the mouth. Now, when it is paired again and again repeatedly, after some time, the sound of a

bell will stimulate a new response that was not there earlier. That is, saliva will come out of the mouth of a dog. So, it will stimulate saliva production simply because the dog learned something new: that the sound of a bell means food will come. So, it and the saliva will automatically go into the mouth.

So, earlier, this bell sound was not producing any response, particularly saliva production. But when it is presented with an unconditioned stimulus, food, the dog learns a new response because of its association. That is the presence of or sound of a bell produces saliva in the mouth of the dog. So it is a newly learned response which is called as a. So condition stimulus is here. Earlier neutral stimulus, when it is paired with the unconditional stimulus, becomes a conditioned stimulus.

So similarly, you know, there are two kinds of responses. One is an unconditioned response. So here is a natural automatic reaction to the unconditional stimulus. So here. When food is produced, the production of saliva is an unconditioned response so here response so when you produce food, there is saliva in the mouth of the dog, which is called saliva production. It's a natural response. The conditioned response is coming from here. Condition stimulus says it comes from here, so it's a learned response, the newly learned response that occurs after the association has been made. So, when saliva is produced in response to the sound of the bell, it is a newly learned response. Then, saliva production in response to the sound of a bell is a conditioned response. So, these are the main terms we need to understand when discussing classical conditioning. So, in the case of Pavlov's theory of classical conditioning, we will see what kind of experiment he did.

So, although learning theory was primarily developed in the US, it was significant because Pavlov's theory, a Russian physiologist, shaped this whole learning theory. In the early 20th century, Pavlov studied the digestive systems of humans and animals to observe the salivary response of dogs. So, he was interested in a physiological response. He was not interested in this behavioural and psychological thing. He discovered this accidentally.

So, he noticed that dogs would automatically salivate when given food and naturally occurring responses. He termed the unconditioned stimulus, as we already discussed, triggered by the unconditioned stimulus: food. So, and then he found that when a neutral stimulus is paired with the light or bell of a sound when the food preceded it, the dog would eventually salivate in response to the light or bell alone. So, he discovered this accidentally. So, this process, where a neutral stimulus becomes associated with the unconditional stimulus to elicit a conditioned response, is known as classical conditioning.

So, this process of associating with two things here in this particular context: a neutral stimulus with an unconditioned stimulus and then there is a conditioned response that happens; a new reaction occurs as a result of association. So, that is called as classical conditioning. So, this whole paradigm is called as classical conditioning. So, Pavlov's extensive research in this area Provided the foundation for classical conditioning, a learning paradigm.

So because we learn a lot of things by associating like this, this is the paradigm. So what is happening? Initially natural response before conditioning happens food is presented to the dog. So, food is an unconditional stimulus, as we already discussed.

So, in response dog salivates. It is a natural response food presented dog salivates. So, there is an unconditional stimulus then there is an unconditioned response. Let us say the neutral stimulus here is the light or the sound of a bell. Whatever it is, in both cases, it works. So, light is switched on, so it is a neutral stimulus. There is no response.

So, this is the first step in researching what it does. In the case of an unconditioned stimulus, there is an unconditioned response. In the case of a neutral stimulus, there is no response. Now, in the conditioning procedure for several trials light is switched on or a bell is sounded; the bell sounds in some cases, and then food is presented. So light, food, so what is happening neutral stimulus plus unconditioned stimulus both are associated together then obviously dog salivates because food is also offered.

So, and response here is still an unconditioned response because the dog is producing saliva because of the presence of a dog. Even though both are paired, dogs are, you know, responding with saliva because of the presence of food only. So, again, here response is still an unconditioned response. Now, after this pairing again and again many times, the third step of conditioning, what happens? Light alone or bell alone is presented.

Now, in this case, food is not presented here. The only light is presented without association with the dog association the food. So, this is a conditioned stimulus because it creates a new response. Now, the dog also salivates here. Without presentation of the food the dog learned a new thing. Because the sound of a bell or light means food is going to come, that expectation associated with conditioning has happened in the mind of the dog, so this condition is called as a conditioned response when the dog salivates in response to a bell or sound or light whatever it is which was a neutral response so now this third step is conditioned response so it is a new response.

It is a newly learned response. So in figure way we can see it just like this. So presence of food saliva is produced. So, this is a kind of unconditioned stimulus and unconditioned response. This is an unconditioned situation, both an unconditional stimulus and an unconditioned response.

Now, if you present just a bell, the dog will not respond to anything. So, this is a neutral situation. Neutral stimuli. Bell does not have any impact on the dog as such.

So, this is neutral. Now, when this neutral is associated with food. So bell then food is presented. Because then, by saying the food, the dog salivates. So, this pairing is done many times.

So then, after many pairing, the dog salivates when just the sound of the bell is produced. So, this is a newly learned response called conditioned response. This is a conditioned stimulus and a conditioned response. From unconditioned stimulus response to conditioned stimulus and response, that is the journey of classical conditioning. So this is how

So, this is a learning paradigm. So, new learning has happened. Now, this is a case of a dog. Now, what are the examples of classical conditioning in human life? We also learn many things through the process of classical conditioning.

A lot of these fear responses that human beings experience, lot of fears are actually, lot of them are classically conditioned responses. So, we learn a lot of worries and a lot of emotions through classical conditioning. For example, a person who has experienced a traumatic event such as a car accident might develop a fear response when hearing the sound of screeching tyres. Okay. So let us say a person is not afraid of driving or the sound of screeching tyres.

Naturally, any human being will not be afraid of this. But let us say a person encounters an accident while driving a car. He might develop a new response that was not there earlier. He might fear that the sound of screeching tyres can stimulate a fear response. Why is this stimulating?

Earlier, it did not create any fear response. Now, just the sound of screeching tyres or even driving again could stimulate a lot of fear in responses within that person. Now, what is happening here? It is a typical case of classical conditioning. So, initially, the sound of screeching tyres was a neutral stimulus.

No one generally is afraid of the sound of screeching tyres for any person. So, it is a neutral stimulus. It does not create any particular response within the person. It does not elicit any fear. So, it is a neutral stimulus here before the accident.

However, during the accident, the sound of the screeching tyre is... An unconditional stimulus in case of accident. Because now this screeching tyre was there during the accident time. So, it was paired with the fear. Because during the accident, a lot of fear response was already there.

So, this fear was associated with the sound of screeching tyres. Because during that accident lot of screeching tyre. So that sound was there in that environment. So, the person's fear was associated with those sounds. And now, what is happened with the fear of anxiety of the accident?

When this accident happened after some conditioning because of the event's intensity, even one accident could create an influential association. The sound of screeching tyres now becomes a conditioned stimulus. Earlier, it did not make any fear response. After the accident, the sound of a screeching tyre is associated with the fear of accidents. Now just, whenever you hear the sound of a screeching tower, it will automatically stimulate all this fear response that was there during the accident.

It will elicit a fear response even in a non-threatening situation. Not necessarily all the time; screeching tyres are associated with accidents. This sound could create a fear response in a non-accidental situation simply because it was associated with something dangerous earlier. So this is a newly learned response, a fear response that happened typically because of classical conditioning. We also develop a lot of taste aversions through classical conditioning.

For example, someone who gets food poisoning after eating, let us say, some item, let us say eating sushi or something, whatever any item after eating that food because of specific reasons or some poisoning or whatever it is, develops certain stomach aches or nausea or whatever it is. Before this incident, that particular sushi food was a neutral stimulus. You used to like, and whatever it is, there was no disliking of that specific food item. When the person eats sushi and then experiences nausea and vomiting due to food poisoning, now it is not because of the sushi but because of something that is around the cooking.

Some poisoning might have happened, and after eating sushi, you started feeling nausea and vomiting Due to food poisoning. So, in this case, it is an unconditioned stimulus,

resulting in illness, which is an unconditioned response. So, food poisoning will trigger that repositioned stimulus and an unconditioned response.

Now, a neutral thing associated with that is sushi, which used to let us say there was no problem while eating this particular food. Now, it got associated with this food poisoning thing. Now, after this event, the person might feel nausea at the mere sight or smell of sushi. Even if the sushi is perfectly safe to eat, this learned aversion can extend to other foods with a similar texture or smell, demonstrating generalisation.

Now, after this incidence of food poisoning, just the moment we see this particular food again, you will feel that whole nausea and vomiting coming up. So that triggers that response associated earlier with that specific incident. Now, in this condition, it is safe to eat sushi still. You will not be able to eat simply because it was associated with those sense of nausea and vomiting, which was associated with food poisoning.

Which happened in one particular case. People may sometimes also generalise. Anything that looks like sushi. They may not be able to eat again. Or at least for some time.

Because of this classical conditioning. So lot of this taste aversion. Many times, people used to love some food. And then after some incident. They are not able to.

They cannot withstand the smell of that food. And other things. So, such a taste aversion can also happen because of classical conditioning. So, some of the other processes that occur in classical conditioning are like, you know, generalisation.

So it means generalisation occurs when a conditioned response is elicited by stimuli similar to the conditioned stimuli even if the stimuli were never paired with the unconditioned stimuli. So generalisation means, for example, in the case of a dog. The sound of a bell produced saliva because it was associated with food. Now, not only the sound of a bell but many similar other sounds, not just the particular bell, but many other similar sounds even if produced that will also stimulate saliva production. So, that is called generalisation.

Similar things will get associated and they will become conditioned stimuli. For example, in this case, if the dog is conditioned to salivate to the sound of a bell, it might also salivate to similar sounds like the sound of a chime or different types of bell, even if those sounds were never directly associated with food because dogs learned to generalise. A similar sound means a similar thing is going to happen. So, sometimes, in some instances of classical conditioning, this generalisation could happen where similar stimuli elicit a similar response.

Sometimes discrimination can also happen where, which is kind of, you know, opposite to generalisation. What happens here? Discrimination is the ability to differentiate between a conditioned stimulus and another stimulus that has been paired or not been paired with the conditioned stimulus. This means that condition response occurs only to that particular specific stimulus and not to a similar stimulus, so in case of generalisation, similar stimuli also will know illicit responses, but in case of discrimination, no other even similar responses or stimulus sorry not responses similar stimuli will not elicit responses only that particular stimuli which were associated with the particular you know the situation will only create that response for example in this case if a dog is conditioned to salivate on the sound of a specific bell

it will salivate only to that particular bell and not to another kind of sounds like chime or different types of bells and so on. So, sometimes discrimination could also be seen in many cases of classical conditioning. In some instances, generalisation also could happen depending on many factors. So, both processes can occur in the case of classical conditioning. Extinction can also happen whenever you learn a new response. It is not like it may not be permanent if you do not feed that particular response again and again.

So, sometimes, if that pairing is not done, then the response will become weaker and weaker and may also become extinct. Extinction occurs when the conditioned stimulus is repeatedly presented without the unconditioned stimulus, leading to a gradual weakening and eventual disappearance of the conditioned response. So, for example, if the sound of the bell is repeatedly presented to the dog without following with food. Now, after a few peering, the dog learns to respond to the sound of a bell. Now again, after that, let us say the bell is presented again and again and again without food many times.

The dog will also again learn something new: the bell will not produce food. So, the dog slowly has this saliva response and will become weaker and weaker, ultimately becoming completely extinct. So, that is called the extinction process. Now, sometimes, there could also be spontaneous recovery. Spontaneous recovery is the reappearance of the previously extinguished condition response after rest.

So when the newly learned response becomes extinct because it is not paired with the unconditioned stimulus, sometimes, let us say after a few days again you produce the sound of a bell suddenly that spontaneous recovery, the dog will start producing saliva. So, it was not wholly forgotten. It was there, but it became dormant. But after a few days, again, when the sound of a bell, the dog hears saliva may be produced by the dog.

So, that is called spontaneous recovery. For example, after the conditioned response to the bell has been extinguished because it was not paired with the food. If some time passes and the bell is presented again, the dog may salivate, even if the food is still not presented. So because that memory is still there, it can get activated again. So, that is called spontaneous recovery.

Pavlov demonstrated that a conditioned response could generalise to similar stimuli. So in many cases of classical conditioning, generalisation could happen. For instance, he found that dogs might respond to changes in the light when the light was used as a neutral stimulus. It was not an original stimulus. Children reading books on a parent's lap could generalise to reading across a room and eventually to reading independently and enjoying it. So many times, we learn in a particular context then things could be generalised. So, this generalisation could happen in many cases. However, Pavlov also showed limits to generalisation. It is not like it can be generalised to anything.

There are limits to it. Dogs learned to discriminate between sounds associated with food and those not. This discrimination meant that they would only salivate to specific food sounds. So, in many cases, discrimination was also observed in the case of classical conditioning, mainly how Pavlov observed. Only when sound was associated with a particular food or when it was food similar sound did they kind of, you know, produce saliva. Still, not in much time did they learn to discriminate with another type of sound, so discrimination was also evident in some cases, so it is possible depending on the context generalisation could also happen. Still, there is a limit to generalisation. Many times animals or human beings could also discriminate. So additionally, Pavlov also demonstrated that conditioning could be reversed sometimes. So if conditioning has happened we can do the opposite of it. Unconditioning can also be done because it is a learned response. So again, this learned response can be unlearned, too.

So the idea is if a conditioned stimulus like a light or sound is repeatedly presented without the unconditioned stimulus, that is, food. The conditioned response diminishes and eventually ceases. The process is known as extinction. So, it is an unlearning process. Extinction says that we can also unlearn when some pairing is not done after repeatedly, and then we can forget about that.

So, extinction shows that we can. Whatever conditioning has happened, we can unlearn that also. Now, there are a lot of limitations to classical conditioning. It is not that you can condition anything with anything. So, there are certain limitations.

Modern research indicates that classical conditioning is not as straightforward as Pavlov found in dogs' cases in certain situations. It may not be so concise in every case. While Pavlov believed that conditioning principles were general rules applicable to all animals, it is now understandable that different organisms are more easily conditioned to respond in a particular way to specific stimuli. Now conditioning, limitation of conditioning here basically means that it is not equally easy to condition with anything with anything. You know, certain stimuli it is easy to condition for certain animals.

And it may not be so easy to condition similar things with another animal. So there are specific inbuilt differences between, let's say, humans and also within animals. So, identical conditioning may not be possible with every animal or stimulus. So there are certain limitations to that also because there are individual differences even within animals and obviously with humans.

For instance, a hungry dog... can be conditioned to salivate with a bell paired with the sight and smell of meat. So, conditioning could be much more strongly done when the dog is starving. As compared to, let's say dog is satiated. So, a hungry dog will immediately respond to food and that kind of thing.

So what is its condition, and that kind of thing also could influence that kind of conditioning can be influenced by that also. However, each species and individual within the species has certain tendencies. So all these tendencies differ from individual to individual, animal to animal. Even within the same animal, not every dog is the same, or every rat is the same. So, they also have individual differences and tendencies, which can either facilitate or hinder terms learning a new response.

For example, humans tend to rely more on visual cues than smells and different people have varied perceptual and aesthetic inclination. So, in the case of humans, for example, we may be more easily conditioned by a visual stimulus. Then, as compared to, let us say, smell and related stimuli, there are also individual differences. Some people you know, there are varied perceptual aesthetic differences. So some people like something more.

So, if that is used as an unconditioned stimulus, they are likelier to learn it faster than another person who may not like it. So the conditioning cannot be done similarly with that person. So, despite all these complexities, classical conditioning remains a fundamental explanation of learning responses in certain conditions, mainly where there is a potent natural pairing of stimulus and automatic response. So, if you look here, classical

conditioning is primarily done in cases where the response is very automatic. And then something new is paired with that.

So, that is the typical case of classical conditioning. So response has to occur automatically. Then, something else is added to that or paired with that. And then the new thing gets newer qualities, which also stimulates a new response. So, that is the case of classical conditioning.

How is this concept of classical conditioning connected to the idea of personality? Now, we have understood this whole paradigm of classical conditioning. Because it is a theory, this particular course is related to personality. How do you relate personality with this specific paradigm? So Pavlov's work with classical conditioning has essential implications for understanding personality, particularly emotional reactions.

As we have seen, classical conditioning can explain a lot of emotional reactions that human beings display. So, emotion is also an essential part of personality. So, at least in that context, classical conditioning can explain many aspects of personality, including emotional reactions. For example, one might be anxious not because of an inherent neurotic personality but because they learn to be anxious through experience.

So the explanation is very different in behavioural paradigm or classical conditioning compared to other theories. A trait theory always tries to find the answer within the individual. So if the person has particular characteristics, they are showing this behaviour. Or let us say anxious behaviour. But behaviourists try to explain that anxious behaviour is not because the person is anxious but because it involves some past conditioning. The person might have learned this anxiety because of its association with something. A person is more likely to develop an anxiety reaction because of his past experiences, which led to classical conditioning of fear responses or anxiety reactions. So they always try to explain using what is there from environmental learning and not the traits or characteristics within the person. So, that is the typical characteristic of behaviourist explanation.

So this means that anxiety as a learned response can also be unlearned or extinguished. So, according to classical conditioning, whatever is learned can also be unlearned. So, it suggests that emotional reactions such as anxiety are not fixed parts of our personality but conditioned responses that can be potentially altered. So, if anxieties are a learned response, we can also unlearn them using the same opposite principles. So, we will be talking about a few things later.

This insight became highly influential in psychology, providing many therapeutic interventions from the behavioural perspective. So a lot of therapies were developed based on classical conditioning. They try to treat anxieties and other reactions because if specific experiences learn these, they can also be unlearned by doing the opposite unlearning process. One of the typical cases that shows anxiety could be learned was also again shown by Pavlov in another experimental setup with the dog itself, which is called as experimental neurosis.

So behaviourism, illustrated by Pavlov's work, offers insight into understanding specific personality dimensions like neuroticism. So, it's a trait theory term neuroticism, which means the persons who are high in neuroticism are people who are more anxious and emotionally unstable. More emotionally strong reactions happen within those individuals. So, behaviourists will not explain that it is a part of or a characteristic within the person but instead say they might have learned it. So, that is the explanation is how it differs here. How this particular trait could come into existence through learning?

Pavlov even showed that through an experiment, obviously it was with the animal. So, this is a paradigm called experimental neurosis. So, Pavlov's experiment conditioning a response similar to neurotic behaviour in a dog demonstrated that neuroticism may be a conditioned response. So, he showed identical anxiety or neurotic kind of personality behaviour. He showed through the experiment that animals could also show this kind of behaviour because of certain learning situations.

So, why don't human beings also learn similar things? We do not have to explain using some internal traits or something like that. So, what was the experiment here? So, initially, this was a typical conditioning experiment done again with the dog. Pavlov trained a dog to associate food presentation with a specific shape, a circle. So, the circle is a conditioned stimulus, or initially, it was a neutral stimulus. It became a conditioned stimulus because it was associated with food and was consistently paired with food, an unconditional stimulus causing the dog to salivate in response to the presentation of a circle. So, in the earlier experimental setup sound of the bell was the neutral stimulus. Here is a presentation of the circle on the screen. So, there was a screen that projected specific figures.

So here, a dog was given food when the circle was presented. So dog learned a new response whenever a circle came on the screen. The dog is given the food, so saliva is produced. So, saliva was conditioned or stimulated in the dog's mouth. So it is a very similar experiment, only the here bell was replaced with a circle.

So, the dog learned a new response: whenever a circle is presented, the dog's saliva is produced in the mouth of the dog. However, A new variation in that experiment was done. What was that? That is an ellipse shape.

So, it is not entirely circular but a bit like a flat circle. Another shape was presented without food. So, when Ellipse was present, the dog was not given food. But when the circle was presented dog was given food. So, the dog learned to discriminate.

Initially, when the circle comes, food is gone. So, automatically presentation of the circle. This led to saliva production, but the dog saliva was not produced when an ellipse figure was presented. So, this was a typical conditioning experiment. Now, what happened?

After the dog had reliably learned to salivate in response to the circle and not to the ellipse, Pavlov introduced a variation in the shape. So he did something more tricky thing here. What did he do? He gradually made the ellipse more circular. So he slowly shrunk that ellipse because it was presented so he could change the shape.

The ellipse was slowly made more circular. So what is happening? The dog confusion was created in the mind of a dog. How to respond? Because the dog initially learned it should not salivate in terms of the response to the dog.

It was not paired with the food in the ellipse, but that ellipse was slowly becoming circular. But in a circle, it was supposed to get food and learned to respond with saliva production. So what is happening here? The confusion was created here. So, he gradually made the ellipse more circular, incrementally reducing the difference between the ellipse and the circle.

This manipulation created ambiguity here. And the shapes became more challenging to distinguish. Now, the dog was not able to determine which one was what. So, there was confusion in the mind of the dog, which led to neurosis-like anxiety-like responses in the dog. So what is happening?

The distinction between the circle, which was associated with food, and the ellipse, which was not associated with food, became less clear. Both were almost becoming the same because the ellipse was becoming circular. The dog started experiencing difficulty in differentiating between the two shapes. It was becoming difficult for the dog to distinguish between them. The dog began to show signs of confusion and anxiety.

This state of confusion and heightened emotional distress was evident, and he termed it as an experimental neurosis by Pavlov. So, the dog exhibits behaviour such as restlessness, whimpering and increased agitation, which are very similar to anxiety and neurosis symptoms that we experience as a human being. So here is just shown in a figure. So, in the circular shape, the dog is supposed to get food, so the dog is approaching.

The dog ran away towards the circular figure but ellipse because it was not associated with this. Still, when this ellipse became more and more circular, the dog was confused about whether to approach or run away, and so on, so he was. The behavioural response was very similar to the anxiety response that we show as a human being. So Pavlov showed that through the experimental condition, even things like anxiety situations could be learned responses. It is typically shown in this experiment that even animals like dogs could understand it. So, a similar thing is also possible in the case of human beings. So, we can explain anxiety using traits like neuroticism using the classical conditioning paradigm.

So, this experiment hints that neuroticism may be a conditioned response. It is shaped by environmental stimuli that require individuals to judge under conditions where differentiation is nearly impossible. In this kind of where differentiation of things is becoming complex, more confusing and ambiguous situations may lead to anxiety reactions, and the person may learn if such conditions are encountered again and again, the person may develop certain kinds of traits like anxiety or neuroticism. For instance, children growing up in an unpredictable environment with unstable parents may experience difficulty predicting their parents' reaction. Let us say this is a situation of human life.

Suppose a child is grown in an unpredictable environment where they do not know which reaction will cause what kind of response. The parents' reactions are volatile, and children cannot predict. If I behave in this way, what kind of response will come? If such a situation one grows up, it is possible that the children will feel very anxious and depressed, and those characteristics may be displaced by the children in adulthood also. So because of this uncertainty, there is no predictable environment in which a child grows, whether to expect praise or punishment consistently.

Such unpredictability may create more anxiety within the child, which may shape adult personality. So this indicates that, like another aspect of personality, neuroticism may be influenced by environmental conditioning, a fundamental behaviourism principle. So, it is an experimental way of proving that many personality traits can be learned. From the environment, we learn something, and it develops as a pattern.

It need not be explained through internal traits, conflicts, etc. Now, John B. Watson properly tried to develop this whole school of behaviourism, and he is also called the father of behaviourism. Because the Pavlov experiment gave the foundation for behaviourism, and Watson, John J. B. Watson was very impressed by Pavlov's findings and tried to give more proper shape to the whole behaviourist concept. So John B. Watson was an American psychologist.

Pavlov's early work greatly influenced him, and he applied Pavlov's observational techniques in his research and replicated some of these findings in the United States. Watson also advocated a shift in American psychology towards becoming an actual science by rejecting the introspective method Freud and other psychoanalysts used, which he called unscientific methodology. So that was the main argument that many methodologies used by psychoanalysis are unscientific because these are mainly case studies. He was impressed by Pavlov's experiments, and he used and replicated a lot of these findings in America.

Watson argued that focusing on observational behaviour, observable behaviour, behaviour which we can observe and measure, and the effects of stimuli using rigorous scientific methods primarily in the laboratory setting to collect data should be the prime objectives of psychologists. He published all his views in 1914, a book called Behaviour, and further elaborated on psychology from the standpoint of behaviourists in 1999. So these are his books, which introduced Pavlov's work to a broader audience and gave the foundation for the whole school of behaviourism. So Watson is credited with founding the school of behaviourism, which other people again extended, which we will discuss in the following lecture.

Although his career in psychology was not very long, he ended his psychology career in 1920 and he left academics and went into business and so on. But still he kind of initially gave foundational work of behaviourism in terms of providing a shape to the school. So Watson is mainly known for an experiment called the Little Albert experiment. So what did he do with his child? So Watson is known for this experiment, which he conducted with one of his graduate students, Rosalie Reiner, in 1920.

In this experiment, an 11-month-old child named Albert was conditioned to fear a white rat. So this was a typical experiment of Pavlov's experiment. He did it with a small child. So obviously, at that time lot of ethical issues were not that strongly followed at that time. Such an experiment will not be possible in today's world.

Where you experiment, and the child learns to fear. So because this is harmful for that child it will not be allowed in today's situation. But at that time, he did it. So that was an 11th-month-old child. He conditioned that child to fear rat white rats. The child was not afraid of any rats at the start. Still, through conditioning this whole experiment or paradigm, they developed a new attempt to create a new response in that child: fear of the white rat. Initially, Albert showed no fear of the rat. Hence, it was a neutral stimulus for this particular child. He was not afraid of the white rat. So, it is a neutral response. The white rat was not creating any response or any fear response. However, what he did, Watson and his student Renner paired the presentation of a rat with a loud, frightening noise, which is an unconditional stimulus because it created a fear response in that child, which naturally caused Albert to cry, which is an unconditioned response. So, if you produce a deafening and disturbing sound to a child or an infant, they will cry because they will be afraid of that sound. So, and what they did, they paired this unconditioned response or stimulus with the neutral stimulus, which is the white rat here. So, after several pairings, what did they do? So, a loud sound was produced whenever this white rat was presented to the child.

So, this pairing was done again and again. And loud noise created fear, and the child started crying. So after this several pairing, Albert began to cry just at the sight of the rat, which is a conditioned stimulus, demonstrating that fear could be conditioned in humans. So, the child was not afraid of the white rat initially, but when this white rat was presented with a loud sound, it created fear, and the child started crying. The child started crying whenever this white rat was produced, even without this sound.

So, the child learned to fear this particular white rat. So, it is a conditioned, newly learned response. So, they demonstrated that fear could also be realised. This experiment also showed generalisation. Now, this little Albert began to show fear responses to other white objects like other furry objects similar to white red like, you know, dolls and other white furry objects.

So, generalisation also happened in this particular case of experiment. So obviously, you know, this experiment will not be ethically allowed in today's scenario. But this experiment shows that fear could be learned also through this experiment. Behaviour therapy has also become quite prominent based on classical conditioning and other things. Many psychologists' classical conditioning of emotional reactions became very crucial in understanding the development of psychopathology.

And a lot of changes in terms of therapy. Also, people started developing therapies based on this classical conditioning because if emotions are learned, they can be unlearned, particularly the negative emotions like fear, anxiety and so on, so behaviour therapy based on classical conditioning focused on extinguishing problematic responses such as conditioned fear conditioned or conditioning new more desirable response to stimulate that illicit unwanted reaction like anxiety. So, for problematic emotional reactions, they try to use behaviour therapy, which is based on classical conditioning.

For example, one of the earlier such therapy was done by Mary Covert Jones in 1924. She conducted one of the first systematic behaviour therapy experiments aiming to remove fear response in a boy named Peter, who was 2 years and 10 months old. Watson created fear in little Albert. Mary Covert Jones did the opposite. There was a boy named Peter who had a similar fear. Because this boy had already natural fear was there. It was not created.

So Mary Covert Jones attempted to remove that fear condition from that boy. Using similar principles but in opposite ways. So Peter had very similar symptoms, which Watson created in Little Albert. He was a generally healthy boy. And well-adjusted but had an exaggerated fear of white rabbits.

This boy was otherwise normal, but he had an exaggerated fear of white rabbits, which extended to other white and furry objects like fur coats, feathers and cotton wool. This fear was similar to the fear response of little Albert that was created. Little Albert was completely healthy and had no fear, but it was made in the case of Little Albert. But in the case of Peter it was already there naturally. So, she tried to remove those fears.

So that was the difference. So Jones meticulously documented Peter's fear response and the conditions that elicited the greatest fear. So she tried to meticulously find out what caused fear, which condition created the highest fear, and all the details she studied about the child. She then aimed to unconditional Peter's fear response to the rabbit and observed that this would generalise to other stimuli.

So she tried to remove that. So how did she do it? Jones bought Peter to play. At the same time, the rabbit was present alongside the other children who were not afraid of the rabbit. So slowly, peter was exposed to a white rabbit in a more controlled condition.

In a play-like situation, other children were playing with that white rabbit, and they were not afraid of it. So Peter slowly looked at the behaviour of other children and slowly, slowly, you know, it learned, you know, unlearned those fear responses. So, Peter's fear

gradually diminished because of exposure to situations where Rabbit was not feared by other individuals, including him, slowly, slowly exposed to those white rabbits. So, this fear response diminished, and he moved from almost complete terror at the sight of the rabbit to an entirely positive response.

So before the experiment, Peter had an almost terrorising experience by seeing a white rabbit. But when it was slowly unconditioned, the response created within Peter that this whole fear completely vanished. Mary Coburn Jones observed that after successfully unconditioning Peter's fear of the rabbit, he also lost his fear of fur coats, feathers and cotton wool, which were part of that original fear conditioning. This generalisation of the unconditioned response to other stimuli indicated that the procedure was effective even without understanding the origin of Peter's fears.

So, they said many other theories try to find causes and that there are too many complex explanations. So, here without even. Going into all the detailed causes and explanations, simple classical conditioning or unlearning principles, counter conditioning became an effective procedure without going into all the complex explanations. It worked. So, that is what is essential.

So, this study marked a significant early use of behaviour therapy to treat condition fear, demonstrating that, you know, this classical conditioning principle could change behaviour positively. Another particular technique that is very popular is called systematic desensitisation, which is also part of behaviour therapy and is applied again using similar principles of unlearning proposed by Joseph Wolpe. Joseph Wolpe was a South African psychiatrist. Pavlov's work significantly influenced him. Wolpe considered persistent anxiety reaction as a learned response that could be unlearned through therapy.

So systematic desensitisation all-phase therapeutic technique aims to inhibit anxiety through counter conditioning. So whenever you know, any particular stimulus causes anxiety. We can counter-condition it using systematic desensitisation, which could be done even by imagining also, or it could be done in an actual situation where you move slowly towards the stimuli. At the same time, whenever anxiety happens, you produce the opposite reaction to the opposite of anxiety, which is relaxation. So, anxiety is replaced with relaxation through counter-conditioning. So, I will not go into the details of these things because that is not the point of this lecture.

So, what happens in counter-conditioning? An individual learns a new response that is physiologically incompatible with the existing anxiety or fear response. So, an

incompatible reaction to stress or anxiety is relaxation. So, you cannot be anxious whenever you are relaxed, or when you are eager, you cannot be comfortable. So, these are opposite incompatible states.

So, what happens in systematic desensitisation? Whenever you experience anxiety because of certain situations or certain stimuli, then you produce or induce a relaxed state. So, anxiety is replaced with relaxation. So, if you are comfortable, anxiety cannot remain together. So this is how the goal is to learn a new response such as relaxation to the feared stimuli.

People have exaggerated fear and anxiety of so many things. So whenever such an anxiety reaction happens, it is replaced with learning relaxation techniques. So, these are elaborate things that he developed. New classical conditioning experiences teach an individual to experience relaxation instead of fear when exposed to those stimuli.

So that is called counter conditioning. So, anxiety was conditioned. Now, it is counter-conditioned with relaxation. So, once this new response is established, the individual's fear is expected to be eliminated. This technique has become a cornerstone of behaviour therapy.

Particularly for treating anxiety and so on. Now, this classical conditioning for some time, interest in classical conditioning declined because of later cognitive psychology, and so many other new paradigms came up. So, after the 40s and 50s, interest in many behavioural things diminished for some time. But, again, a resurgence in recognising the importance of slowly emerged in the '90s and early 2000s.

Some more research started, and renewed interest happened in classical conditioning—one area where it also showed more applications, like the unconscious development of fears and attitudes. Many attitudes we develop regarding certain judgments about things and people could also be classically conditioned. Some experiments have demonstrated that classical conditioning can also be used to show how people unconsciously develop fears and attitudes towards others. For example, some studies by Krosnick and Kuliks have demonstrated that subliminal presentation of stimuli with positive or negative emotional value can influence attitude towards the stimuli. For instance, if a photo is subliminally associated with negative emotions, people will unconsciously develop a dislike for that photo and vice versa for the positive association. So subliminal presentation means whenever you present, let us say, project a photo on the screen, and you ask people to look at those photos, and then you know, you are asked to rate how to what extent you like about

this photo and dislike that photo. So it was found that when it was very subliminal, a person may not even notice that certain negative emotions are associated with specific stimuli, whatever stimuli are present, and then the person is required to rate the liking and dislikes about that stimuli and then with that stimuli, if they also subliminally present some emotional content or let us say you know some you know positive emotional you know some pictures with some positive emotions or negative emotions. Which could be so quickly present subliminally that a person may not even notice. And then this kind of stimuli, whatever stimuli you present, maybe a neutral phase or something like that. So it was found that subliminally, when such stimuli are presented with a harmful emotional object, then people automatically develop disliking for that photo, which objectively should not have any reason for disliking simply because it was subliminally associated with negative emotions or vice versa.

When people start liking a particular stimulus when it is subliminally paired with positive emotional emotion, anything that stimulates positive feelings, so at such deeper level, at the unconscious level also when something is paired with positive and negative emotions, people may develop liking and disliking without consciously thinking about it. So that is something called as an unconscious development. So, this classical conditioning could also create many fears, attitudes, and likes and dislikes about people. You know, just one thing, something has got associated with this person.

And you start developing disliking for that person. So, many such kinds of things could be influenced by association. So, many of these attitudes and prejudices that people show could also be classically conditioned. So, this line of research suggests that many of our attitudes and preferences could be classically conditioned on a subliminal or unconscious basis. Social psychologist Cassia Poe, you know, conducted that aversive stimuli prejudices.

Once created may be challenging to eliminate consciously. People can have egalitarian beliefs about something and still display prejudicial behaviour in certain situations due to conditioned aversive reactions learned early in childhood so that we might have learned a lot of liking and disliking about so many aspects. It could be about some communities, some people, you know, it could be about some regions of a country, whatever it is. We develop certain emotions associated with those objects, and even though you become highly intellectual and conscious, you have very secular or egalitarian views about something. However, still, those emotions developed earlier could still influence your attitude. You may have subtle dislikes about some things, people, and communities simply

because those emotions were associated with them. So, it is possible that many of these attitudes, preferences, and prejudices that we develop about many objects, peoples, and communities could be classically conditioned. So this implies that in non-prejudicial attitudes, even though you are not biased in your conscious thought processes, there can be highly conditioned emotional reactions towards the same objects, which may influence your actual behaviour.

You may not say that in your thoughts and speaking, but when behaviour comes, you may show those biased behaviours simply because of classical conditioning. Sometimes, our self-esteem and sense of self-worth could also be classical conditioning when it can be influenced by specific classical conditioning because self-esteem could also change.

You know, there may be some stability around it, but still, self-esteem could change. But those changes could also be sometimes unbearable through classical conditioning. So, some research also links classical conditioning principles to self-esteem. For example, Beckers and colleagues hypothesised that the expression of high self-esteem could be influenced by classical conditioning.

So what did they do? Participants engaged in a conditioning task where self-relevant words appeared on a computer screen alongside a picture of smiling people. So, some self-relevant words. For example, some words about yourself. Certain statements were projected on the screen, along with specific emotional faces, were also projected.

Now this experimental condition, in one condition, the words or statements were paired with positive emotions with the self. In the control condition, another condition, participants' self-relevant words were paired with a mix of smiling, frowning and neutral faces. So, what kind of faces that generate certain emotions within us were associated with certain self-relevant words by which you describe yourself? It impacts your judgment about yourself, which is self-esteem. So result shows that after completing the task, participant self-esteem was measured before and after the experiment.

The result shows that participants were exposed to experimental conditions where self-relevant words were consistently paired with smiling faces. So when some self-related words were presented with smiling faces. So, smiling faces evoke positive emotions. It enhanced the self-esteem of those participants. Displayed higher levels of self-esteem compared to those in the control condition where it was mixed.

Sometimes frowning faces, sometimes opposing faces were presented. So comparatively, in both the groups before and after, the self-esteem was much better in the case of the experimental conditions where a smiling face was associated with self-related words. The effect was observed in the overall participant group and subgroups categorised by pre-experimental self-esteem levels, indicating that classical conditioning can enhance or decrease self-esteem. So it is possible many times, our concept of self-esteem. A lot of classical conditioning could also influence the level of self-esteem in our lives in various settings.

Classical conditioning has many implications towards our personality and emotions, and so it developed from the animal model, but it has a lot of applications in human life as well. So with this, I will stop here. In the next class, we will be talking about another behavioural paradigm, which is called operant conditioning, and how it is different from classical conditioning. We will discuss all these details in the next class. So with this, I stop here.

Thank you.