Psychology of Emotion: Theory and Applications
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Module 8, Lecture 18: Depression

I welcome you all to module number 8, lecture number 18 of the course titled "Psychology of Emotions: Theory and Applications". So, today we will be starting module 8, it is a new module and in this module, we will be talking about emotion-based disorder. So, we have been talking about diverse aspects of emotions and the psychological aspects of emotions, and in this module, we will be talking about how emotional issues can lead to psychological disorders. So, today we will be talking about depression as a disorder, more specifically we will be looking at depression in today's lecture, and in the next lecture, we will be talking about anxiety disorders. So, just to give you a brief recap before we talk about today's lecture, the last module was about understanding the connection between emotions and cognitions. So, we have discussed the diverse aspects of how emotion can influence cognition and also we discussed how cognition can influence emotions. More specifically in the last lecture, we talked about how emotion influences our judgment and decision making. In that context, we have discussed the concept of mood-congruent judgment which means how our present mood (depending on the balance of your mood) influences our judgment processes. For example, when we are happy, the happy mood could influence our judgment and we are likely to judge something positively and vice versa. So, we discussed this whole concept of mood-congruent judgment and the evidence associated with it and then we discussed the diverse possible theoretical explanations of why this mood-congruent judgment occurs in that context, we have discussed somatic marker hypothesis, affect priming, affect as an informational model, affect infusion model. So, these are all the detailed aspects that we have looked into in the last lecture.

So, today we will be talking about mostly depression as a disorder that is emotion-based. We will be talking about major depression, types of depression, causes of depression, cognitions in depression, and at last briefly about treatment of depression. So, when we talk about emotion-based disorder we are talking about a group of mental health conditions which is characterized by some disturbances in emotion, which could be intense persistent emotional disturbances or experiences. Most psychological disorders are connected with some sort of disturbance in emotional aspects, however, some disorders are more specifically very focused on their emotion, like depression which we will be talking about. So, these disorders can affect a person's ability to regulate their emotions and may result in significant distress or impairment in social, occupational, or other areas of function. So, when one is not able to regulate emotions or emotions become too disturbed and

exaggerated, then it will hamper one's functioning in the day to day life. So, in that sense, it becomes a disorder.

Some of the examples of emotion-based disorders, where emotion is at the center of such disorders are depression which we will be talking about today, then anxiety disorder which also will be discussed in the next lecture. So, anxiety disorders are a group of disorders characterized by excessive worry and too much anxiety, this anxiety could be free-floating, it cannot be sometimes connected to some specific event or object, and can lead to physical symptoms such as rapid heartbeat, sweating, shaking, and so on. Then there is bipolar disorder, which is also a condition characterized by extreme mood swings between periods of mania and depression. So, there is a switching between depression and then mania, then depression then mania, and the cycle goes on.

Mania means the person becomes highly elevated, too much of increased energy and the person may express too much of joy and irritability or too much of activity. So, it becomes more than the normal proportion. So, that is why it is called a disorder. So, the person suddenly will become extremely active to the extent that it becomes highly irritable, the mood can become very agitated, and suddenly the person may again go to a depressed mood where the person can show all the symptoms of depression. So, similarly, these two extreme moods occur. So, that is the case with bipolar disorder.

Then there is borderline personality disorder. It is a condition characterized by very instability in mood, relationships, and self-image. The people's whole sense of self-image, mood swings, and relationships, all become very unstable and are diagnosed with borderline personality disorder.

Then there is post-traumatic stress disorder, which was earlier categorized under anxiety disorder, but in the latest classification, it is categorized under trauma and stress-related disorders. So, PTSD is a condition that can develop after experiencing or witnessing a traumatic event, characterized by symptoms of intrusive thought, re-experiencing of those traumatic events again and again in terms of flashbacks, avoidance of trauma-related stimuli, and physiologically very hyper-aroused. These symptoms should last at least a month or more, then only it is categorized as PTSD.

So, today we will be talking about depression as a disorder, where emotion is at the center of it. So, generally the typical depression, in more technical terms, is called a major depression. So, general depression is characterized by a persistent low mood that lasts for a significant period of time, without any clear trigger or event that justifies a severe emotional reaction. We will be discussing symptoms such as persistent low mood, and sadness in more detail. So, the major aspect of depression is persistent low mood or sadness which could last for a significant period of time. Sometimes it can happen without any trigger or any specific reasons, sometimes there could be some trigger also, but in many

cases, it could be without any clear trigger or event to justify such emotional reaction. In most cases even if there is a trigger, that cannot be justified for experiencing such a low mood. So, that is called major depression.

Now depression is a very prevalent disorder. It can affect diverse people. Some statistics state that about 10 percent of the general population are affected by this disorder and in clinical settings it could be around 20 percent.

Now let us see the details of the symptoms of this disorder. So, we have something called a DSM in psychology or psychiatric categorization of disorders, which is the Diagnostic and Statistical Manual of Mental Disorders, that categorizes or classifies different mental disorders this has been revised and now the fifth version is the latest one and we will see what are the criteria in this fifth version of the latest DSM categorization of psychological disorder.

So, the diagnostic criteria of major depression include at least 5 symptoms or more, which we will discuss now. These symptoms should be present at least for 2 weeks and they should represent a change from the previous function, suddenly there is a change from previous functioning. So, at least it should be persistent for 2 weeks, and the symptoms that we will be discussing now, at least 5 of them should be present and more can be there.

Now, one of the major things is that at least one of the symptoms between depressed mood and loss of interest must be there to call something a major depression, mostly both are there all the time, but at least one has to be there. Generally, in most of the depression cases, both symptoms are there. So, we will look at the list of symptoms and according to the DSM criteria, at least 5 of the symptoms should be present.

The first one is a depressed mood. As we have said earlier, this is a very important symptom, this is the first thing that is visible in a depressed patient their mood is generally depressed nearly every day as indicated by either their report to others or observations made by others. So, the first symptom is consistent low mood.

The second is marked by diminished interest or pleasure in almost all activities for most of the day. So, a lack of interest in doing day-to-day activities, almost every day, can be reported by the person or one can observe it in their behavior. So, these two are the most important symptoms, mostly both of them are present in a depressed person, or at least one has to be present.

The third one is significant weight loss (when not dieting) or weight gain. So, both opposite spectrums can happen. So, that is an interesting thing in depression, a lot of these symptoms could be in the opposite spectrum. So, either there can be weight loss or there could be weight gain, both the spectrum can be possible.

The fourth symptom also includes another extreme spectrum, either insomnia or hypersomnia nearly every day. Insomnia means the person is not able to sleep. Hypersomnia means too much sleep nearly every day. So, this can manifest in both ways.

The fifth one is psychomotor agitation or retardation nearly every day. So, psychomotor agitation means mental and physical activities in terms of body movements, etc., will be very high or very low. It could be your speech, how you speak, or how you move, either it will be too agitated, or it will be too low or too down. For example, when you speak, your speech will be very slow. So, both kinds of spectrum can be there.

The sixth one is fatigue or loss of energy nearly every day. Fatigue or loss of energy includes too much tiredness and those kinds of things.

Seven is a feeling of worthlessness or excessive or inappropriate guilt. There is a sense of worthlessness, you feel your life is useless or you are useless. The sense of worthiness or sense of self-esteem diminishes very strongly. This feeling of worthlessness can persistently remain. Generally, sometimes people can have temporary feelings of worthlessness because of something that happened in their life, then with time people generally regain back their original sense of worth, but in the case of depression, the sense of worthlessness remains persistent.

The eighth is a diminished ability to think or concentrate or indecisiveness nearly every day. So, when you are not able to get interested in daily activities, you will not be able to concentrate also.

The ninth one is the recurrent thoughts of death and recurrent suicidal ideation without a specified plan or suicidal attempt or specific plan for communicating or committing suicide. So, death-related thoughts could be more prevalent when you feel your life is worthless or you are worthless. So, one natural outcome could be a lot of death and suicide-related thoughts could also be prevalent among these patients. It may or may not lead to suicide, but it leads to suicidal ideation at the thought level, at least the frequency of such thoughts increases.

So, out of these nine symptoms, at least five should be there and at least one among the first two is compulsory to call a person as depressed in terms of diagnostic criteria.

Now, it also further says that all the symptoms should cause clinically significant distress or impairment in diverse aspects of functioning such as social functioning, occupational functioning, and other important areas of functioning. So, all these will impact your functioning in everyday life. In terms of your social life, you will not be able to connect with people properly, you will not be able to do justice to your job, and so on. So, all these will be impaired. This episode should not be attributed to other physiological effects of a substance or other medical conditions. So, these symptoms should not be stimulated by

something like drugs or some substance or some effect of medication. If these symptoms are stimulated by the intake of drugs or medications, then it is not depression, because then it is stimulated by those substances. So, that has to be removed before diagnosing someone as having depression. So, these are major symptoms or criteria to diagnose someone with depression or a disorder of depression.

So, clinicians can use diverse ways of diagnosis of depression. They may conduct some simple conversation with the patient or the client gather information about the symptoms and may determine whether most of the symptoms look like depression or not. They confirm it with other aspects and diagnose with depression.

Clinicians may also use structured clinical interviews. So, there are very structured interviews with all the structured questions that will asked by the clinicians, and according to the response, they will determine whether somebody has depression or not.

Some people in informal settings as well as in research settings, use questionnaires such as Beck's Depression Inventory, which asks people about certain symptoms, whether they have it or not, and the person can tick and find out whether most of the important symptoms are there or not. The diagnosis is done based on the scores obtained in those questionnaires.

So, people can use diverse ways to diagnose depression. So, typically another thing that one has to understand when we talk about depression is that some people may have extreme sadness periodically which may not be depression. So, we should distinguish sadness from depression, in most of life, sadness could be different from depression in many contexts.

So, many times, extreme sadness may not be depression. If sadness is the normal part of the grieving process after somebody has lost a loved one or has experienced some traumatic event, then it is not depression. So, very specific triggers, such as when someone experiences the death of a loved one, that person for a certain period, will be very sad. That feeling of sadness is not depression, it is the normal response to the grieving process.

So, during bereavement, a normal response can look like depression, where one feels sad regardless of positive events, and this state of sadness can persist for weeks and months. Sometimes there may be a brief period of pleasure, but the deep grief may remain. However, cases of severe and prolonged grief may also stimulate depression. Sometimes it could get converted into depression. If somebody is grieving because of a certain life event, like the death of a loved one, this is not depression, this is simply a grieving process, however, the symptoms may look very similar to depression. But if the grieving process sustains for a very long time, it can stimulate depression.

So, are there different types of depression? When we talk about depression, is it the same thing for everybody or are there different categories? So, let us see the Diagnostic and

Statistical Manual criteria for depression. As we have discussed, DSM states that a person must experience either a depressed mood and/or a lack of pleasure, nearly every day for at least two weeks. Now this criterion is very clear cut and this is the most important criterion. However, for the other criteria, there is a paradox in terms of either this or that could also be possible, extreme of each can be possible. So, that is a very intriguing thing in the sense that they will be opposites also. So, there seems to be a contradiction among the other diagnostic criteria such as weight gain or weight loss, sleeping too much or sleeping too little, psychosomatic retardation, or agitation. Except for the first two criteria, which are the primary criteria, for all the other criteria why are there extremely opposite symptoms?

So, it has been suggested that depression symptoms are associated with the opposite ends of the same spectrum. There can be opposite things which may indicate that there can be the existence of two distinct types of depression with different biological and psychological features. So, this was an initial hypothesis and some of the researchers tried to look into it.

One of the first proposals to differentiate or classify depression into two types was made by Peter Maas in 1975. Peter Maas in 1975 suggested that there could be type A and type B. So, depression can be of type A and type B based on a few differences in symptoms. He suggests that type A depression is linked to the deficiency of dopamine in the brain. So, we will be talking about a little bit about this neurotransmitter.

So, the brain has many chemicals which are released based on emotional experiences. So, two chemicals that are very strongly connected with depression are dopamine and serotonin. So, we will discuss these two later. So, Peter Maas suggested that type A depression is linked to a lack or deficiency of dopamine in the brain and type B is characterized by a deficiency of serotonin. So, depression is linked with two neurochemicals, one is connected with type A one is connected with type B.

So, if his proposal is correct, then the two neuro-chemical patterns should be associated with different symptoms. This means that type A, which is connected with dopamine, should involve insensitivity to reward because dopamine as a neurochemical is connected to the reward system. So, the feeling of reward and pleasure out of reward is connected to dopamine. So, then type A should be connected to insensitivity towards reward, if there is a lack of dopamine. So, the person will not respond to reward, and type B should involve intense feelings of sadness which is connected to serotonin. So, based on these symptoms, he proposed that there could be two possibilities with two neurochemicals.

Now, in DSM 4 there were these two typical types of depression that were characterized, one is melancholic depression or atypical depression. So, melancholic is also called typical depression and the other type is called Atypical depression. Typical depression and atypical

depression in DSM 5 are not exclusively used. Now, some other categories in terms of more measured depression and other depressions are used, but this was there in DSM 4. These are somewhat connected to Maas's type A and type B.

So, melancholic or typical depression is similar to type B depression that Maas talked about. It is associated with decreased appetite, weight loss, insomnia, and psychomotor agitation. So, one cluster of symptoms according to Maas's Type B is called Typical Depression or Melancholic Depression. In contrast, Atypical depression, which corresponds to Maas's Type A, is associated with the opposite spectrum, like decreased versus increased appetite, weight loss versus weight gain, insomnia versus sleeping too much, and psychomotor agitation versus psychomotor retardation. So, based on this opposite spectrum of symptoms, one is considered as type A and another as type B and this was recognized in the classification system also in terms of Typical depression and Atypical depression. This is no longer very formally used nowadays because not very specific evidence is present in terms of that, but this term was very popular earlier, and still used by many people.

A study by Keller and Nesse found that people reported more fatigue and pessimism after a personal failure, indicating Atypical depression, while they reported more crying and sadness after social loss, probably indicating Typical depression. However, the study only examined short-term distress of an event, not full-blown depression. So, some studies found that possibly different stimulations can lead to different types of disorders. However, not much very clear-cut evidence is there in terms of long-term studies.

Now, distinguishing between these different subtypes of depression can also explain some contradictions in the diagnostic criteria of depression. Studies suggest that at least this will resolve some of these diagnostic criteria that why opposite spectrums are there.

Suggests that both the serotonin and dopamine systems could be involved in depression, one may be linked with one typical and another may be linked with atypical, and treatments targeting both systems can improve symptoms. However, the division between typical and atypical depression is still a matter of debate, not everybody agrees with it, as symptoms do not always fit exclusively into one of these subtypes. Many times people have mixed symptoms. So, that is why it is still a matter of debate and still, these terms are used in many contexts, but may not be exclusively supported by everybody or something like that.

Some individuals may have symptoms of both subtypes, as I have said. Further research is needed to fully understand and differentiate between these subtypes of depression and how they relate to underlying biological and psychological factors. So, research is evolving and people are trying to understand it more and more, but people generally in DSM-5 use terms

like major depressive disorder and persistent depressive disorder, these categories are used more prominently in the latest classification system.

So, one is the major depressive disorder that we discussed in the beginning. It is characterized by one or more major depressive episodes. The common usage of the term "clinical depression" is referred to as major depressive disorder, and all the symptoms of DSM-5 that we have discussed are the symptoms of major depressive disorders and people can have both the opposite spectrums of symptoms together. So, one cluster or category of disorder is called major depressive disorder.

Another type that is also included is called persistent depressive disorder also known as dysthymia. Now, symptoms are very similar to major depression, but here the difference is that it involves chronic depression lasting 2 years or more. So, when the depression symptoms last for a very long time, 2 years or more, then it is called as persistent depressive disorder. Major depression may not be that long, but persistent depressive disorder could be very time taking and it could last for more than 2 years. So, the term clinical depression usually refers to major depressive disorder which is the most commonly recognized form of depression. So, typically this is the most commonly used term, and most people come under this category only. However, in DSM-5 persistent depressive disorder is also a new term used to describe what was previously known as dysthymia. It was there in the previous classification, but the name was dysthymia or chronic major depression. So, now, it is called as persistent depressive disorder. Now, this classification of depression has evolved due to the complex and constantly changing nature of depressive disorder.

Historically, persistent depression was considered a depressed personality state, but it is now seen as a diseased state rather than a personality disorder. So, some conceptual or theoretical differences are also there. So, when you say it is a diseased state, it means it is a state of disease that can change. So, it is not a part of your personality, earlier it was considered as a part of your personality.

Similar to the other forms of depression individuals with persistent depression disorder may encounter emotions of profound sadness and hopelessness. However, in persistent depression disorder, these symptoms may endure for numerous years. So, that is the difference. Earlier this persistent disorder was mostly considered as a personality disorder. So, it was believed that there is a problem in your personality itself. Now, it is considered more as a diseased state rather than a part of personality and symptoms are very similar to other forms of depression, the only difference is that in persistent depression disorder, the symptoms last for a long time like more than 2 years or 2 or more years. However, it is important to note that this classification and understanding of the depression subtype is still a topic of ongoing research and debate, and things keep changing in the DSM classification

with the evolving research, the criteria and the classification terms also change. So, this is the latest thing that is there.

Now, one of the things that people also talk about in depression is something called as Reward Insensitivity Hypothesis in depression.

What is this reward insensitivity hypothesis that is found among people with depression? Now, whenever we people think of depression, as we have seen most of the symptoms and major symptom is often associated with extreme sadness. However, some researcher argues that in the depressed individual, the main symptom is a lack of pleasure rather than sadness. So, they say the one major thing in depression is not just sadness, but the main aspect is lack of pleasure. The first two symptoms are about sadness and pleasure. So, according to this hypothesis, more than sadness, it is the lack of pleasure that is more dominant in depression.

People did different studies that support this idea. One is a study where depressed and non-depressed individuals watched different types of films like sad films and comedy films. The two groups responded similarly to sad and frightening films. So, when they looked at sad films, the response of the depressed and non-depressed individuals was very similar, there was not much response, and the emotional response was very similar, but the depressed individual reported significantly less amusement while viewing comedy films. So, in terms of comedy, which is about positive mood and pleasure, depressed people significantly reported less enjoyment of comedy.

They even reported mild sadness during comedies. So, this is one research that shows that for depressed people, sadness could be very similar to a lot of other non-depressed people, but the depressed people find it very difficult to gain pleasure out of whatever reward system that they got from the environment. So, that could be more important according to this hypothesis. That does not mean that sadness is not present, but that lack of pleasure could be more significant in depression according to this hypothesis.

Another study by Sloan and colleagues in 2001 also found that depressed and non-depressed women, when they were shown a series of pictures and their emotional responses, along with their facial expressions were measured, results showed that both depressed and non-depressed women had similar reactions to the sad picture, just like the earlier study. When the sad pictures were shown the response and facial expressions of depressed women were almost similar to the non-depressed women, but depressed women had significantly less response to the pleasant pictures.

So, when people see good pictures or any picture that evokes positive emotions, the response is much less in the case of depressed people as compared to non-depressed people. So, non-depressed people can enjoy something much more, while depressed people are not

able to enjoy it. So, the reward and pleasure reaction is much less in depressed people, as compared to non-depressed people.

So, both the study shows similar findings. So, this is the data that talks about this study. In terms of pleasant stimuli and unpleasant stimuli, the response measured by facial expression was very similar, but when pleasant stimuli were shown, the intensity of facial expression was much less for the depressed people, they were not enjoying much in terms of the reaction, it was very less, but for non-depressed people, the reaction was much higher.

These participants were also asked to rate how well 12 pleasant and unpleasant words applied to them. When these pleasant and unpleasant pictures and words were presented to them, they were asked specifically to report what they experienced and they were unexpectedly asked to recall all the 24 words. So, basically, 12 pleasant, and 12 unpleasant words were shown, initially, they were not told they should remember these words, but then unexpectedly, they were asked to recall and write the words. The study found that depressed women remembered fewer pleasant words compared to non-depressed women. So, pleasant words were more remembered by non-depressed women as compared to depressed women. So, depressed women could recall very few pleasant words, while both groups had a similar recall of unpleasant words. Unpleasant words were almost similarly recalled by the women of both depressed and non-depressed groups, but for pleasant words, depressed individuals could recall very less. So, this also indicates some problems with the reward and pleasure aspect for depressed people, getting pleasure out of stimuli is one of the major aspects of depressed people.

A study by Henriques and Davidson (2000) compared the behavior of depressed and non-depressed participants in word recognition tasks with and without a reward system. So, there was a need to recognize some words, which was presented earlier and there was a reward system involved in it. So, participants were presented with the list of words on a computer screen and then asked to identify the previously presented word in a longer list. So, the recognition task is very simple. So, you will be shown a list of words. One word after the other will be flashed on the screen, and then there will be a long list of words including some of the words that were presented earlier, and then the participant needs to recognize which words were presented earlier. So, the task involves just recognition, not recall. However, they included a reward system in some trials. In some trials, the participants were simply asked to answer as accurately as possible, while the participants were simply asked to answer as accurately as possible, while in others, all correct identifications earned them 10-cent reward. So, in some trials, there was no reward and in some trials reward was included, where they would get 10 cents as a reward and there would be no penalty for saying ‘yes’ meaning, if they said ‘yes’ for an incorrect answer, there would not be any penalty, but the more correct answer, more the reward in terms of

10 cents for each answer.

So, the result shows that non-depressed participant adjusted their strategy to maximize their chances of earning rewards. So, they need to just say 'yes', even if it is not correct, there will not be a penalty. So, there is no harm in saying 'yes' even if you do not know some answers. It was found that most of the non-depressed people tried to earn maximum reward by saying 'yes' more often, but depressed participants failed to do so. So, the depressed participants were less interested in getting rewards, the reward was not stimulating enough for them. So, this suggested that they were less responsive to potential rewards.

Most of these studies found that the results were in a similar line. This reduced response to reward in depression may be related to dysfunction in the dopamine circuits, which will be discussed later. Dopamine is responsible for response to the reward system, therefore, probably because of the lack of this neurochemical in the brain, the responsiveness is less. Some studies have reported lower levels of dopamine in people with depression and animal studies indicate that manipulating dopamine activity in the reward circuit can produce depression-like behavior.

So, let us say when you reduce the dopamine in the brain, it produces depression-like symptoms, but there are many debates and controversies in this context, we will discuss this later. So, dopamine can play an important role in depression, but it is not necessarily as clear-cut as it is shown in many cases. So, let us see what are the causes. So, now we have discussed different types of depression, and how the reward system is involved in the depression system.

Let us see what are the possible causes of depression. Now, many depressive episodes are triggered by significant losses, when some bad event occurs, such as job loss or the end of an important relationship etc., it can trigger depression, but not necessarily. However, not everyone who experiences such losses becomes depressed. So, this is not a necessary condition, but many times some negative events can stimulate depression.

Riolo et al. (2005) also found that about 10 percent of individuals will experience diagnosable depression after a major loss. So, not everybody, but 10- 15 percent of individuals will experience depression, not just sadness, but depression in terms of diagnosable depression. So, there can be variability, some people experience or get into full-blown depression after a major loss, while some may not. So, there are individual differences. So, the reason for this variability is why people are different in terms of response to depression, is called the 'default mood' of the people. So, everybody has a default mood, or emotional set which suggests that we have some pre-existing mood that is probably influenced by our genetics. So, mood means some people are generally happier,

some people are maybe, in general, they are in temperament wise they are more sad. So, there can be a genetic component too. So, there is a default mood in everybody which may be a significant factor in responding to life events. So, the default mood will be different for different individuals, and depending on that our reaction to events also changes or differs.

So, one of the major causes of depression could be the genetics. We have discussed the differences in the default mood, which could be set by genetics. So, why do people have depression in the first place, the reason could be genetic or the contribution of the genes.

So, the reason why people have different default moods or people react differently is still unclear, but one reason could be the genetic composition of a person. So, genetics may play a role in the predisposition to depression, as depression tends to run in families. Generally, it has been found that depression runs in families. Now, that does not mean that everybody in that family will have depression, but generally, it was found that if somebody is depressed, probably their family members are also more likely to have depression. So, it runs in families according to a lot of research. Studies have shown that depression is generally more common among biological relatives than adoptive relatives of adoptive children who develop depression later in life.

So, when a child is adopted by another family and later the child becomes depressed, it was found their biological parents were more likely to be depressed. So, depression is more correlated with their biological parents and it is not connected to the adopted parents. So, it shows that instead of the environment, genetics is more important in this case, because their gene comes from their biological parents. The risk of depression is highest for those with depressed female relatives and those whose relatives become depressed early in life.

The serotonin-transporter gene could be one of the candidate genes that may predispose an individual to depression. So, some of the genes that control the secretion of these neurotransmitters or neurochemicals like serotonin, could create these differences in predisposition, as to why some people are more prone to depression as compared to others. So, according to research, it seems that genes that predispose individuals to depression are likely to have other effects as well.

So, with depression, many other symptoms are also associated with it. So, it seems that the gene that predisposes individuals to depression or increases the risk of depression also has other functions. This function creates another cluster of other symptoms, not just depression. For example, families that have a history of major depression are also more likely to have a history of alcohol dependence, substance abuse, antisocial personality disorder, bulimia, panic disorder, migraine headaches, attention-deficit disorder, and so on.

It seems some of these automatically come with depression, especially when it runs in the family. It is not necessarily that these symptoms always co-occur with depression, but it is more likely to simultaneously occur with depression. So, it could be possible that the same gene that predisposes people to depression has also an impact on these symptoms.

If someone has a relative with any of these disorders, the risk of developing the same disorder or others is higher than the average. So, its probability is higher. Gender also seems to play a role in how this predisposition manifests within a family. On average, more men tend to have issues with alcohol, while more women tend to have issues with depression. So, some gender differences could also be there. In terms of depression, it seems to be more common among women as compared to men, while alcohol issues are more common among men as compared to women. This may also be connected with cultural issues and other things.

So, the underlying genetic predisposition may be the same for both issues, but one could manifest more in males and one could manifest more in females.

Now, let us see very briefly about dopamine and serotonin. So, serotonin and dopamine are neurochemicals or neurotransmitters. They are released in the brain and body in reaction to different emotional experiences.

Serotonin is closely related to mood regulation, emotions, and overall well-being. It is often referred to as feel-good neurotransmitters. So, when serotonins are released into the system, we generally feel good, and positive emotion arises. So, a happy feeling will arise or whenever we experience happiness probably serotonin is released. So, all the emotions will be associated with some release of this neurotransmitter. One prevailing theory about depression is that there is a deficiency of serotonin in depressed individuals. So, they are not able to feel happiness or the mood becomes low because of lack of serotonin. This is one hypothesis. This theory suggests that a lower level of serotonin in the brain contributes to the development of depression. So, this lower level, as compared to our normal people could contribute to depression. Many anti-depressant medications work on this principle, such as selective serotonin reuptake inhibitors (SSRIs). Most of the pills that are given by psychiatrists work by increasing the availability of serotonin in the brain. This medicine stimulates more serotonin in the brain, so, that it changes your mood. So, most of this medication works on this principle. So, it is important to note that the relationship between serotonin levels and depression is not as straightforward as once thought and the cause of depression could be multifaceted. So, this is one hypothesis where in some cases it was found that serotonin levels and depression could be connected, but research has not found very consistent evidence. The cause of depression could also be multifaceted. This could be one of the aspects that two people have found different dimensions to it. So, it is not a very clear-cut finding, but it could contribute to depression in some cases.

Dopamine is another neurotransmitter that is associated with the reward system of the brain. The motivation to do something because there is a reward to it comes from dopamine and pleasure pathways. It is involved in motivation, pleasure, and experience of rewards. We like to get rewards and we feel happy and motivated to do something when we get a reward. It is because of the effect of dopamine. Dopamine is not as directly linked to depression as serotonin, but dopamine does play a role in symptoms of some depression, particularly in the context of pleasure from the reward which is also called anhedonia, which is the inability to experience pleasure from activities.

So, the reward insensitivity hypothesis that we talked about, could be linked to dopamine, because dopamine is related to getting pleasure from any reward and if the dopamine is less in your brain, then one will not get pleasure out of the reward, the reward may not stimulate such individuals. So, in some cases of depression, there may be imbalances in dopamine levels and or dysfunction in the brain's dopamine receptors, but again it cannot be generalized to everybody. In some cases, it could lead to reduced motivation, low energy level, and lack of interest in previously enjoyed activities, which are the common symptoms of depression. So, it is possible that dopamine also plays a very important role and a lot of this medication works on that. Sometimes they are effective, and sometimes they are not effective, depending on many other causes associated with depression.

So, dopamine and serotonin are certainly involved in the development and regulation of mood, their roles in mood are very clear. Their roles in depression are however more nuanced and not very clear-cut and straightforward. So, it is much more complex and not fully understood even today, more research will clarify, but they have their role in depression, and some medications work because of this principle.

Now, depression can be also associated with past experiences. According to some theories, our past experiences may increase our vulnerability to depression in response to new negative experiences. Research also shows women are more likely to experience certain types of negative experiences such as childhood sexual abuse, which may increase the risk of depression.

So, that is why cases of depression could be higher among women, because their experiences with life because of their gender, they are more likely to experience certain negative experiences in life, which could contribute to depression. Several studies have found that women who have experienced childhood sexual abuse are more likely to experience adult depression and suicidal behavior after experiencing stressful life events.

These studies are limited by the fact that individuals who have experienced childhood sexual abuse may also experience other negative experiences, such as poverty or abuse, which may also contribute to depression.

Researchers conducted twin studies to address this limitation, by comparing twins who have reported different levels of childhood sexual abuse. These studies found that the twin who reported sexual abuse, had a greater risk of depression and suicide attempts than their non-abused twins, although both twins had a higher risk of depression than the general population. So, some of these negative life events could exaggerate the risk of depression. So, overall family environment may predispose individuals to depression but childhood sexual abuse adds to that predisposition. So, some of the specific events may contribute to depression much more, and overall whatever the environment we are put in during childhood, can also contribute to depression, apart from genetic reasons.

Now, let us see some of the cognitive aspects of depression, which are the thought processes that happen at the thought level when one experiences depression. So, in depression, many changes happen at the thought or belief level. These are called cognitions, specifically, individuals may experience feelings of sadness when they perceive themselves to be powerless or lacking control in negative situations. Furthermore, if they have a general sense of helplessness or hopelessness, they may be more likely to experience depression. So, at the thought level, what do you think and how do you think, also causes depression. When you think you are powerless, you lack control in your life, when you have a sense of helplessness and hopelessness, it could be associated with a sense of depression.

Cognitive theories of depression focus on how these negative events beliefs and attitudes contribute to sadness and depression. Mostly they focus on thought level rather than genetics. This theory generally suggests that individuals with depression tend to have distorted negative views about themselves. So, generally, most people who have depression have a distorted negative view of themselves their experiences, and their futures. Generally, they have distorted views, which means they are not realistic. If something negative happens, they exaggerate the impact of those events and think their life is worthless. So, distortion is very strong in patients with depression.

One of the most prominent theories is Beck's Cognitive Theory. He is one of the most prominent people who researched the cognition of depressed individuals. One of the main findings or main aspects of his theory is that people with depression have negative and irrational thoughts about themselves, about the world, and the future. So, these are called cognitive triads. So, depressed people have very persistent negative attitudes toward these three aspects.

So, they have negative attitudes about themselves, about the world in general which includes other people, and their future. So, they have negative attitudes towards it or negative views about it. So, these are called cognitive triads and this could contribute to

depression. So, according to this theory, depressed individuals tend to interpret events in a very negative way, which leads to feelings of hopelessness and helplessness. So, if you think you are worthless, this whole world is not dependable, and your future is dark, filled with sadness, helplessness, and hopelessness, you are more likely to get depression.

Another aspect of cognition in depression is that the explanatory style. How people explain things in their lives is different ways. This is connected to negative cognitions. Explanatory style refers to an individual's habitual way of explaining. So, how we explain things can differ from person to person and from situation to situation, but sometimes people have a habitual way of explaining things. They will look at everything in a similar pattern. This is known as the habitual way of explaining or interpreting events and experiences in their life. Sometimes how people explain events that happen in their life, becomes habitual. These are called explanatory styles. So, it becomes a style of looking at things. It can be broadly categorized into a pessimistic and optimistic style of explaining things.

Mostly depression is associated with pessimistic explanations. What is this pessimistic explanation style? A pessimistic explanation involves an internal explanation, which means individuals with a pessimistic explanatory style tend to attribute negative events to internal personal factors. So, if something bad happens they will say it is because of their flaws. So, they believe that the cause of the event is themselves such as their personality, or internal flaws. So, they feel that something bad happened because they are not good at it. Sometimes things can happen because of many other reasons that are outside of themselves, but they will say it is because of me, my inability, and my flaws. So, that is an internal aspect.

The second is stable. Their explanations are very stable in the sense they will explain the negative events as enduring and stable over time. So, they believe that when something bad happens, it will continue to be a problem. So, sometimes you can the negative events occurs for a short time, and people tries to change them in the next time, but those with pessimistic explanatory style will view it as stable, as something that will impact their whole life for a long time. So, this is the stability aspect.

Then there is a global aspect, means they generalize it to everything. It is style of attribution of negative events to global factors, affecting many aspects of their life. For instance, if they fail in a test, they might think that they are incompetent in all areas of their life. So, if they fail in one aspect of things, like let us say if they fail in one interview, they will think that they will never be able to succeed in other interviews. So, they make it a very generalized thing. They say my life is worthless because I failed in one thing. So, that is the global aspect.

So, pessimistic explanatory styles include these factors.

Optimistic explanatory style is just the opposite; they will attribute negative things to situational things most of the time. They think that they failed because so many other things or luck was not on their side or some other people were not supporting something.

They also view it as an unstable thing, believing that the situation can change and improve over time something. They also view negative events as more specific, if they fail in one thing, they will view it as a failure in this thing only, not in every aspect of their life.

So, there is a difference in their explanatory style.

So, depression is generally found to be connected with the explanatory style. Most of the depressed people develops this pessimistic explanatory style, which could be one of the patterns of their thought processes. So, this could contribute to depression.

Another aspect that was also found is that people with depression have something called "learned helplessness", which was proposed by Martin Seligman in 1967, which is associated with giving up and avoidance syndrome. People give up because of some past history that has happened with them.

This learned helplessness occurs when an individual repeatedly experiences a negative uncontrollable situation. So, let us say in the past, somebody has experienced a series of negative events and could not change those events, something bad happened three or four times, but they could not change it. Now, this leads people to develop a mindset that they will not be able to change anything in the future, or if something happens similarly again the person will not even try to face it, because he has developed this whole helplessness. They person feels that he tried a few times in the earlier and failed. So, even if things change now, the person would not even try to change it, because of his learned helplessness. So, learned helplessness occurs after an individual repeatedly experiences negative uncontrollable situations and becomes passive and unmotivated and stay that way even after the environment changes or success is possible. So, even when success is possible, they will not try to do it again, simply because of their past repeated failures or negative experiences. So, that is called learned helplessness.

Research shows that a lot of human beings, particularly people with depression or those prone to depression, shows signs of learned helplessness. So, here individual believes that efforts are futile, why should I even put in the effort because I am going to fail again? So, this is what develops in the mind. So, people when they face uncontrollable and undesirable events multiple times, perceive a lack of control, leads to a generalized helpless behavior.

It may contribute to depression and other anxiety disorders. Studies shows that depression could be associated with this concept.

This negative concept and explanatory style is also connected to something called ‘unrealistic or irrational beliefs’. Depressed people hold unrealistic expectations about what they need to accomplish in order to find satisfaction. So, along with this pessimistic explanatory style, they have unrealistic and irrational beliefs also. For instance, they may believe that failing something diminishes their worth as a person. So, if they fail in something, they will believe that it is that they worthless. They connect one failure to their whole individuality. So, this is an irrational belief, failing in one thing can lead to viewing your whole life as a failure. So, this is called irrational belief. So, these beliefs can lead to them interpreting even minor setbacks in their life to inadequacy and may quickly become discouraged as a result. So, this tendency will make them more prone to get depressed and sad with even minor setbacks in their life.

So, this lack of motivation and activity is a hallmark of depression. These are very important characteristics that are visible in the minds of depressed people. This dysfunctional irrational belief is closely related to the pessimistic explanatory style, that we talked about, but they are even more strongly related to depression than even the explanatory style. So, this unrealistic belief and irrational beliefs are very strongly found among patients with depression.

Another thing is rumination. It is also very prominent among depressed people. Rumination is a tendency to repeatedly and excessively think about the same thoughts, concerns, and problems often in a circular unproductive manner. So, something happens negatively, and you are thinking again and again, so your mind is flooded with a series of multiple, unproductive thoughts.

So, you are focusing on the problems. So, sometimes this can happen automatically to almost every individual, but it can remain for a long time for some people. So, rumination generally happens when a negative thing happens in our life. People dwell on distress symptoms and negative emotions without making progress. Such thought processes are unproductive because you just focus on the problem and your thoughts are circulating one after the other, without really reaching any solution. So, these are called ruminative thoughts.

So, rumination can have a connection to a lot of things, especially when failure happens or when you have some regret from the past, when there is a conflict between individuals or you are worrying about your future, rumination can happen. Almost everybody can experience rumination, but when it becomes prolonged, that can create problems. Studies have shown that individuals who engage in ruminations are more likely to develop depression. So, depression could be connected to rumination. Research indicates that women are more frequently diagnosed with depression, as compared to men, possibly

because they are more prone to ruminate. More specifically, women who ruminate excessively and have low mastery scores, are at higher risk of developing depression.

Rumination does not cause depression as such, but it may serve as an early symptom of depression. Evidence indicates that teaching individuals how to avoid rumination, can help prevent depression. So, interventions targeted at reducing rumination can sometimes prevent depression or reduce depression, which means that rumination is associated with depression, but it may not directly cause depression.

So, at the last, we will talk about what are some of the possible treatments that people take for depression. These are just for indications; it does not mean you can treat yourself based on this information. These are just some of the possible treatments available.

The majority of depression cases are treated with mostly talk therapy, and psychotherapy. Medications are also used or sometimes a combination of these two is provided. This is a generally accepted trend of treatment. Many studies show the effectiveness of both medication and talk therapy or a combination of both. Some clinicians may prefer one over the other, depending on their preferences, while others may use both approaches. So, there are various approaches therapists use to assist people in coping with depression. Among these, cognitive therapy has proven to be the most effective. This is because as we have seen, one of the major problems with patients with depression is, that their whole thought processes get distorted, or there is a pattern developed that is very pessimistic. So, intervention in their thought process or changing that thought process is one of the most important therapies that is done for depressed people, which is called cognitive therapy.

So, they try to change their thought processes. So, these are called cognitive therapies and these are found to be very effective in altering dysfunctional biases and the explanatory style of individuals with depression. So, it may take time, but this is how they are trained to understand how their thinking is not rational, and slowly the therapists try to change their thought processes, which can improve their emotional aspect.

In recent years, there have been many significant uses of anti-depressant medications, used in extreme cases. When prescribed and monitored properly, these medications can also effectively work in many cases. Most of these anti-depressant drugs, as I have already mentioned, are working on increasing the levels of serotonin and dopamine in the brain because one of the basic ideas is that they are there is a deficiency of these neurotransmitters in the brain in case of depression. So, some medications are given to increase their level, which can, in many cases improve depression, but it may not improve in all cases. Some anti-depressants, like Prozac, primarily affect serotonin. They increase the serotonin level, allowing the release of serotonin, where it can activate its receptors. Such medications are called SSRIs or Selective Serotonin Reuptake Inhibitors. So, they

will increase the level or they keep forcing the serotonin level to remain in the brain for more time.

Some work by blocking the serotonin transporter. In this way, it also increases the level of serotonin. Some also increase the dopamine level, prolonging the effect of both the transporters.

On the other hand, some anti-depressants only act on dopamine synapses. Some people may respond differently, depending on the cause of depression. So, some medication works with dopamine, some work with serotonin, some may work with both, and all these combinations can work for some people depending on the causal factors.

So, it is a complex disorder, and it may need multiple interventions. One thing may not work. So, according to various studies, while most anti-depression drug increases serotonin activity, the hypothesis that depression is caused by a serotonin deficit is not fully understood and it is not fully supported. However, researchers found that depressed individuals often have abnormalities of the serotonin transporter protein, thus some serotonin connections have been found there in most depression cases, and some gene variants related to these serotonin transporter proteins are associated with better response to SSRIs.

So, in cases where traditional treatment, such as shock therapy and medication fail, in extreme cases, sometimes some people also use electroconvulsive therapy or ECT or a brief period of complete sleep deprivation may be suggested as a last resort. So, these are not generally used, these are not even popularly used, and these only work sometimes as a last resort.

In ECT, people send some electric current to the brain, while sleep deprivation temporarily alters some brain chemistry to alleviate depression. So, sending some electric current sometimes also changes brain chemistry. So, sometimes it works for some people. However, these treatments are not commonly used and are typically reserved for some severe cases.

Some research suggests that some lifestyle changes can also improve mood and prevent depression. In some cases, it includes exposure to moderate amounts of sunlight and a full-spectrum of light.

Some depression are associated with seasonal changes and it may be related to light. So, a moderate amount of sunlight exposure could be good. Regular exercise such as jogging, and brisk walking can also improve mood and prevent depression in many cases. Maintaining a regular sleep schedule is also important in reducing the risk of depression. So, these are all related to improving your mood and preventing depression. This does not

mean these are treatments, these are preventive steps that can help to prevent depression. So, these are not factors that can prevent depression completely, but these are facilitative factors that can help you along with other things. So, seeking professional help remains the most effective way of dealing with depression, when it is a major depression properly diagnosable depression.

So, with this, I will stop here. So, this lecture in a nutshell about depression, a very complex disorder, we do not know many aspects of it. Whatever is known, I have put some of the research here. So, we will talk about another disorder in the next lecture. Thank you.