

**NPTEL
NPTEL ONLINE CERTIFICATION COURSE**

Course Name

Stress Management

by

**Prof Rajlakshmi Guha
Centre for Education Technology
IIT Kharagpur**

Lecture 01: What is Stress

Welcome to the course on stress management today is the first lecture on the scientific foundations of stress and in this module we shall discuss.

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OUTLINE

- UNDERSTAND WHAT STRESS IS
- WHY TWO INDIVIDUALS RESPOND DIFFERENTLY DURING A STRESSFUL SITUATION?
- EXPLORE THE HISTORY AND GENESIS OF STRESS RESEARCH

What stress is? Why two individuals respond differently during a stressful situation and definitely explore the history and genesis of stress research but before that I would like to start with a thought imagine just before you switched on the computer today to listen to this lecture think if your computer would not start and it after a long time, a long amount of effort that you

could start your computer but you realize that there are several important files missing from the hard disk how would you feel?

What were the what would be the bodily changes that would occur what would be the thoughts that would rush to your mind now many of my students would tell me that this is a panic button and this would immediately the panic button will switch on now what exactly is the panic button and why does it switch on in such situations let us see so today in our lecture we will cover this and we will start with what is stress?

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What is stress?

Stress can be defined as a response of the body
to any demand placed on it
Stress can be influenced by both
external and internal factors

Now stress can be defined as a response of the body to any demand placed on it. So, it could be an external demand or it could be an internal demand. So now what is an external demand? It could be something like the fallen temperature outside it could be something like excessive heat in the you know claustrophobic in a closed up room it could be a biological demand like the illness trying to affect you and you are feeling easy about it there could be a psychological demand like fear of being ridiculed in a public situation.

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WHY DO INDIVIDUALS BEHAVE DIFFERENTLY DURING STRESS?

- It follows that what is stressful to one person may be a refreshing challenge to another, depending upon his perception of the situation as well as his perception of his ability to cope with that situation
(Later explained in personality factors and stress)

The individual's judgment that a stressful situation exists, initiates a stress response

- Without this appraisal there is no stress in the person's psychological schema
- Even though a situation is perceived as a demand or threat it may still not mobilize a stress response if the individual thinks that he is able to cope with it adequately, either on his own or with the help of external resources or support from other people in his life

Now, why do individuals behave differently during stress? We have seen that a stress affects individuals differently because of the way they perceive the stress is stressful situation so it could it's I will give you an example say teacher comes into the classroom and says that all of you have failed this exam and minded this is a very important exam.

There will be many students who start crying or who get really perturbed by the teachers statement maybe some are not bothered at all maybe some rebuked the teacher for the way he has corrected the paper. Now why do people respond differently one of the reasons is that it depends on the perception of the situation as well as the individual's perception to cope with the situation.

So this one individual who thinks oh god! This is the end of the world I will never be able to pass this exam then, his bodily stresses and his mind will respond differently to the situation compared to another individual who thinks, that it's not a big deal next time there will be another exam and I will show the teacher that I know much more than he thinks I do so the individuals judgment that a stressful situation exists initiates a stress response now without this is very

important without this appraisal there is no stress in the person's psychological domain or psychological schema.

So that is if I think that this situation is stressful I might be more stressed if I think it is no big deal then I will not be stressed an example say if you were asked to speak in your in a public forum when you were a child you do not have a problem but when the sticks grew higher say you have to speak before a crowd who are going to evaluate you on your performance how you stand how you look how you talk what kind of vocabulary you are using then definitely the stakes are high and you perceive this situation as more stressful than you did as a child.

So now that is what the psychological? What we mean by the psychological schema? And how it changes with time? And with personal experiences? We will talk about this later in a different module but another thing that I would like to emphasize is that even though a situation is perceived as a demand or threat it may not mobilize a straight stress response that is even if I think that this is serious, I am going to land myself in trouble or is it is an O God! Responds but it may not mobilize some of the stressful thoughts are the stressful bodily changes.

Now one of the reasons being that I feel that there is a way. I can cope with it now these coping strategies again we are going to discuss this later this the coping strategies of an individual primarily based from his internal coping strategies some are from the way he thinks and some are external protective factors like family friends social support so it could be like if I did not do well in this exam never mind. I have my friend who is really great in this paper so he is going to help me to deal with this so it will not be a problem so I am not getting stressed because I have the ability or the coping mechanism to deal with it.

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PIONEERS in stress research

- There are earlier antecedents to the concept of stress. For centuries physicians and patients have made the association between **adverse life events and illness**
- The links between emotion and sudden cardiac death have been repeatedly noted in sources as diverse as the Bible, Indian Mythological texts, several anthropological texts, and clinical experience
- Many contemporary cultures regard illness as the outcome of being out of balance with the environment and its demands – absence of harmony
a manifestation of inadequate coping with diverse stressors

Now we will talk about the internal and the external factors again but right now we will get into the pioneers in stress research. Now stress has been a topic of study over centuries and even in different metallurgical texts and biblical references we come across stress and emotion and sudden cardiac death which is also mentioned in the Indian metallurgical effects also there is a biblical reference to there are earlier other earlier decisions to the concept of stress where physicians and patients have linked adverse life affects life events and illness.

And of course many contemporary cultures this is very interesting regard illness as the outcome of being out of balance with the environment and its demands that is there is an absence of harmony between the environment and the individual. I will give you an example think about an individual who is got a job in a city where he does not know the language he is unaware he is not used to the food habits and he is the environmental conditions are very different from where he was brought and bread so think about his harmony with the environment.

Now if he can accommodate himself to the changing demands of the environment then he will not have a potential stressor affecting him but if he feels that there is I cannot accommodate I cannot adjust to the changing demands say if it is a very cold country and he is not able to adjust

to the extreme cold harsh temperatures or if he is a very social person and he has work in isolated conditions then he may not have he may have adjustment problems.

Now with adjustment problems now you have to see that these actually are created due to disharmony between the environment and the individual now this creates a stress within the individual that brings about other psychosomatic problems other bodily issues that make create and that may cause several that may be the cause of several illnesses several psychological illnesses like depression light psychosomatic disorders physiological disorders extra.

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PIONEERS....

Walter Cannon (1932) - a Physiologist with Harvard Medical School –
first described body's response to stress

- Ex: walking down a lonely by lane dimly lit, while you are half way down to the point of no return you see a burly figure carrying a club standing on your way. What do you feel?
 - increased heart beat, shortness of breath, increased perspiration, muscles tense, and a whole array of changes occur in the body
- Adrenalin gush**
- body prepares itself → when confronted by a threat → to either stand ground and fight or run away

Walter Cannon termed this response as the **FIGHT OR FLIGHT RESPONSE**

So now talking about the Pioneers another very interesting fact to observe is that the most the maximum amount of stress research started during the world wars now I will leave it to you to understand why it was very important to understand stress during the world war now one of the famous pioneers in stress research was Walter cannon.

Walter cannon was a physiologist in Harvard Medical School and he first described body's response to stress I will give you a situation imagine walking down a lonely dark alley at a very dimly lit dark alley at night and there is nobody around and while when you have reached almost

a point of no return you see a burly figure coming with a club in his hand and approaching you how would you respond? What would be the immediate thought and immediate bodily changes that you would go through?

I will mention some of them it could be an increased heartbeat perspiration dryness of mouth sudden tremor muscle stand up and there could be a lot of other responses that your body is going through. Now in many of you would know have heard of the word adrenaline rush and people very often talk about the adrenaline rush and we respond to a situation immediately so this what is happening to the body.

The body is preparing itself to confront a threat and why the stand ground that is either to fight or flight or run away. Now Walter cannon termed this response as the fight-or-flight response now this is the way he described body's response to stress.

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PIONEERS....

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Walter Cannon termed this response as the **FIGHT OR FLIGHT RESPONSE**

Now this is very important for the body to prepare itself to face the threat one of the reasons being that if it does not then it will be affected by the threat or rather the threat will actually overpower you in this case the burly figure might just hit you or it might cause a stress or cause a

problem to your survival. So in this case the body prepares itself to either fight or run away from this place.

Now this concept of the fight-or-flight response introduced by Walter Cannon was very much appreciated and by several researchers across the world and some of the researchers actually followed up the theory and propounded many theories and one of them being Hans Selye. Hans Selye was an endocrinologist and he found while working with rats he found that the rats response he introduced some stress on the rat and he saw that there were several changes in the body that happened due to that introduction of the stressor.

Now a stressor is something that is that has a potential to create stress we will talk about this later again now he saw Hans Selye saw that there was his rats who were given stress stressors had developed an enlargement of the adrenal cortex shrinkage of lymphatic structures and also in the stomach these were to name a few of the bodily changes that happen to an exposure to stressors in there in his rats.

So Selye he identified that regardless of the source of stress the body responded in the same manner to a stressful situation and this he summarized as stress reactivity and this he stress reactivity he said it was a three phase process which he termed as general adaptation syndrome you can go through his famous work the stress of life in 1956 Hans and Selye had published this work and it is a very interesting read.

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PIONEERS

GENERAL ADAPTATION SYNDROME

ALARM REACTION – The body shows changes at the first exposure of the stressor

STAGE OF RESISTANCE – Resistance ensues if continued exposure to the stressor is compatible with adaptation. The bodily signs characteristic of the alarm reaction have disappeared and resistance rises above normal

Now talking a little about the general adaptation syndrome so Selye said that the first phase is the alarm reaction where the body shows changes at the first exposure of the stressor so the body is identifying that there is a stressful stimulus so that is the stage of alarm reaction the next stage is the stage of resistance where the body is trying to fight the stress or so and is trying to get adapted to the stressful situation if it can adapt well and good if not the body shows signs characteristic of the resistance their resistance Rises higher than the normal and definitely.

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PIONEERS

GENERAL ADAPTATION SYNDROME

- **STAGE OF EXHAUSTION:** Long continued exposure to the same stressor depletes the adaptation energy and leads to exhaustion. The alarm reaction reappears, but the resistance phase being absent, individual succumbs to the stressor

Ex: fever – immune system's attempt to fight infectious agents like virus and bacteria

After that is the stage of exhaustion where long-continued stressful situation makes the body get when deplete the energy of the body and leads to exhaustion now the alarm reactions may reappear but this time the body is not able to fight it now I will give you an example of fever. Now fever is where the immune system of the body is trying to fight the infectious agents like virus and bacteria. So when a virus or bacteria is trying to enter the body the body's first reacts by an alarm reaction so it is aware that there is a foreign agent trying to affect the body the next stage is that of resistance where the temperature of the body rises to kill these germs.

Now if the temperature that has risen is not enough to actually manage these infectious agents then exhaustion strikes that is the less strikes the individual. Now let us see this was a biological stress or where I explained it to you now let us see what happens in a psychological situation.

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Greenberg, J. 2012

Say in the alarm phase for example an individual is has gone to a party and this individual suffers from social anxiety so he is anxious of what people are thinking about him how they are observing each of his movements as to what he is saying what he is wearing whether he is fumbling whether he is talking a little too much so he is this is an individual with a social anxiety gone to a party situation and he this is the first alarm this is a serious stressor for me the resistance phase when others are trying to involve that individuals in the situation in the party now he experiences different guidance of physiological changes.

So it could be that he is perspiring he is having muscle tension he has increased heart rate he is fumbling for words he is trying to escape the situation and in the exhaustion face if this carries on for a long time then he may undergo an exhaustion phase where he is actually suffering from an illness it could. He could develop something like blood pressure problem or also coronary heart disease now this I have adapted from a Greenville 2012.

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PIONEERS

- Hans Selye defined stress as “the nonspecific response of the body to any demand made upon it.”
- That means good things (e.g., a job promotion) to which we must adapt (termed **eustress**) and bad things (e.g., the death of a loved one) to which we must adapt (termed **distress**); both are experienced the same physiologically

Now Hans Selye does define stress as a nonspecific response of the body to any demand upon it so that means the good things so whether it is whatever this stressful demand it could be a positive demand it could be a negative demand so it could be something like a good thing like a job promotion which you must adapt to that was this is known as eustress and the bad things like the bereavement or leaving a place and going to different place which must wish you must adapt to again so this is termed distress and both these situations are actually experienced the same way physiologically.

So that is why it is very important that the life events we understand the life events that an individual is going through when we are talking about stress management. So rather I should say when we are talking about stress so what are the life events that an individual is going through in the recent period of time because that is going to affect the physiological changes.

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PIONEERS

A T W Simeons (1961) – related evolution to psychosomatic disease

The human brain (especially Diencephalon) has failed to develop at the pace needed to respond to symbolic stressors of the twentieth century

Ex: when our self-esteem is threatened, the brain prepares the body with the fight-or-flight response.

If the threat to self-esteem stems from fear of embarrassment during public speaking, neither fighting nor running away is an appropriate reaction

Now Simeon's another very interesting individual in 1961 related evolution to psychosomatic disease I have spoken of psychosomatic disease before psychosomatic disease is bodily change a body in bodily illness that is created due to a stress within the individual. Now single said that the human brain has failed to develop at the pace needed to respond to symbolic stressors and the 20th century. Now what does he mean by symbolic stresses.

Symbolic stressors are stresses that are actually not a threat to our survival for example say if I think that this will sit in this situation I may be ridiculed that is not a threat to my biological survival unfortunately the brain has not developed to accommodate itself to this change or to this symbolic stressor so the what does a brain do? The brain responds in the same way as it would do to a survival threat.

So see if there is a threat to the self-esteem from a fear of embarrassment during public speaking now the fight-or-flight response would not be a healthy response or say if you have to if you are facing if you have to face an interview and that is causing real anxiety to you running away from the interview situation the flight response or hitting the interviewer the fight response would not help you.

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Several researchers have added to the work of Cannon, Selye, Simeons, and others to shed more light on the **relationship of stress to body processes**

With this understanding has come a better appreciation of which illnesses and diseases are associated with stress and how to prevent these conditions from developing

Now several other researchers have added to the work of Cannon, Selye and Simeons and they shed more light to the relationship of stress to the body processes so with this understanding we have better understood several illnesses and diseases and how this the more important thing is that we realize that we need to address the stress to prevent these conditions from developing and a lot of research has continued on how to reduce the stress burden from society.

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PIONEERS

Holmes and Rahe (1967) – emphasized the role of Life Events in stress

They showed that the more significant the changes in one's life, the greater the chance of the onset of illness

Lazarus, DeLongis and others found that daily hassles are even more detrimental to health than major life changes

Holmes and Rahe here again two very important people in 1967 they emphasized on the role of life events in stress. I was just talking about like events in stressed they showed that the more significant the changes in one's life the greater is the chance of the on set of illness in fact I have a paper one of my research work on life events suicide and stress shows that the life events are a very important factor as a perceived stressor to cause attempted suicides to that is to force an individual to compel an individual to attempt suicide.

Now Lazarus the longest and others found that daily hassles are also a very important factor and which is detrimental to health and major life changes.

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PIONEERS

Harold Wolff (1953) – found that a large number of death before release had resulted among inmates of Japanese concentration camps as compared to German camps due to the increased amount of **emotional stress**

Harold Wolff in 1953 found that a large number of this I'll explain it a little this as I told you that during the world wars there was a lot of stress research and Harold whose research he tried to identify why there were so many people dying in the Japanese concentration camps as compared to German concentration camps just before release.

Now they were he found that around one in 30 would die out in the Japanese concentration camps so now this as compared to the German concentration camps which is around 1 in 100 so this was very strange considering that the environmental context and the food and the other conditions being constant what was the reason that led to so many deaths in constant Japanese concentration camps.

So he found that a large number of death before release in inmates of Japanese concentration camps were due to an increased amount of a new emotional stress as compared to the German camps. Now we will have to remember that most of the constant people in the concentration camps in Germany were from nearby land so they were also used to the they were familiar with so there were some familiarity with the conditions environmental conditions but the for Japan

being faraway place and maybe the emotional stressor was much higher as compared to that in the German concentration camps.

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Pioneer	Date	Area of Study/Influence
Celak Vaut	1800	Hypnosis
Volker Gassner	1830	The fight or flight response
Edmund Jacobson	1890	Progressive relaxation
Johannes Schulz	1929	Autogenic training
Sheldon Wolff/Kurt Wolff	1953	Stress and muscular tension and relaxation techniques
George Engel	1975	Stress and disease model
Hans Selye	1936	The physiological response to stress
A. T. W. Houtman	1951	Psychosomatic disease
Stewart Wolf	1965	Stress and the digestive system
Wolfgang Luthe	1966	Autogenic training
Lawrence Lipton	1966	Stress and cancer
Richard Lazarus	1966	Stress and coping/transactional model
Thomas Holmes/Richard Rahe	1967	Stressful life events/stress
Robert Nath Waxson	1971	Transcendental meditation
Frederic Schlegel	1971	Stress and headache
Meera Krieger/Raj Parniani	1974	Transcendental meditation
Carl Lazarus	1975	Stress and cancer
Richard Axel	1976	Psychoneuroimmunology
Herbert Benson	1976	The relaxation response/meditation
David Ekman	1976	Microbliss
Gary Schubert	1976	Meditation/meditation
Frederic Karasek	1979	Job Demand Control Model
Stevenson Roberts	1979	Headlines
Arno Delongis	1982	Health and Stress
Dean Ornish	1988	Stress/Heart/Coronary Heart Disease
Jan Klotz Zinn	1990	Meditation and Stress Reduction
Caroline Musselth	1993	Headlines
J.H. Houtman-Glass	1999	Psychoneuroimmunology
Shirley Taylor	2000	Transcendental Meditation/Women's Control Style
Paulo Paus	2000	Health and Stress and Health
John Dantzer	2006	Immune System
E. J. Worthington	2006	Engagement and Health

Greenberg, J

Now this is a list that I give before you can go through it and you can see how very interesting research on stress has been carried out across centuries I would like to mention Benson and Jacobson who later worked on relaxation training. We will talk about relaxation training in a different module but this is very important because Benson and Jacobson showed that with relaxation you can actually reduce the stress response and that this was identified as one of the major areas ways to relieve stress.

Now to summarize we have seen what stress is and why individuals differ in their stress response and we have explored the history and genesis of stress in the next module we shall discuss about the sources of stress learn to distinguish between new stress distress and find out how stress can also be helpful to the individual. Thank You.