

MODULE III

EMOTIONS

Definition and nature of emotions - Biological bases of emotions - Theories of emotions: James Lange theory, Cannon Bard theory, Two factor theory and Opponent process theory - Expression of emotion.

Emotions are Reactions consisting of subjective cognitive states, physiological reactions, and expressive behavior. Emotions involve three major components:

1. Physiological changes within our bodies - shifts in heart rate, blood pressure, and so on;
2. Subjective cognitive states - the personal experience we label as emotions; and
3. Expressive behaviors - outward signs of these internal reactions.

Contemporary psychologists define emotion as a complex pattern of bodily and mental changes that includes physiological arousal, feelings, cognitive processes, and behavioral reactions made in response to a situation perceived as personally significant.

Nature of Emotions

- 1 Emotions are universal prevalent in every living organism at all stages of development from infancy to old age.
- 2 Emotions are personal and they differ from one individual to another.
- 3 Some emotions can be aroused by a number of different stimuli (e.g., objects and situations)
- 4 Emotions rise abruptly but subside slowly.
- 5 Emotions have the quality of displacement. For example, in the office if his officer scolded a person, then he would beat his child for a small thing.
- 6 There is a negative correlation between the upsurge of emotion and intelligence. Emotional upsurge adversely affects the problem of reasoning and thinking process.

- 7 The core of an emotion is feeling which is aroused by a perceived stimulus giving birth to impulsive act.
- 8 Emotional experience involves many physical and physiological changes e.g. Bulge of the eye, the flush of the face, the pulse rate, increased BP and perspiration.
- 9 Emotions and their expression can be modified to a great extent with learning and experience.
- 10 When an organism is experiencing emotion, considerable amount of energy is released. This is true of many emotions. But emotions like grief reduce energy and activity.

KINDS OF EMOTIONS

In general, there are positive and negative emotions. *Positive emotions* are pleasant emotions such as love, amusement, joy, happiness etc, which are helpful and essential to the normal development. *Negative emotions* are those unpleasant emotions like fear, anger, and jealousy, which are harmful to the well-being and development of an individual.

However, we should not think that experiencing positive emotions is always good and that of negative emotions is bad. This depends on the frequency and intensity of emotional experience the situation, occasion and the nature of stimuli. Emotions of too much intensity and frequency provide harmful effects. Sometimes negative emotion of fear is very important in preparing the individual to face danger.

BIOLOGICAL BASES OF EMOTIONS

Emotions are always accompanied with many physical and physiological changes in an organism. Some of these changes expressed in overt behavior are easily observable. While others in terms of physiological changes require some special devices for their proper measurement. The flushing of face during anger and blushing of face during embarrassed results from the changes in Blood Pressure and circulation. There will be increase in rate of respiration, blood volume, stomach and intestinal movements may reduce and the flow of digestive juices including saliva decreases. Other changes are dilation and contractions of pupils and increased

perspiration. These changes form the basis of the lie detector test. The instrument is known as polygraph.

The most objective way of studying emotion is through the investigation of the physiological changes that occur when the individual is disturbed emotionally. The physiological reactions and changes are controlled by the endocrine glands and the Autonomic Nervous System and our brain. The endocrine glands affect the emotional behavior of an individual by the under secretion or over secretion of the hormones.

During a profound emotional experience the body undergoes lot of changes:

1. Changes occur in the electrical resistance of the skin which is known as Galvanic skin response (GSR). It is measured through electrodes placed on the palms of the hands.
2. Heart rate increases and in certain cases the individual may experience sharp pains around the heart.
3. BP is elevated and the volume of blood in various organs of the body is altered.
4. Respiration becomes rapid.
5. The pupils of the eyes dilate so that more light falls on the retina.
6. Salivary secretion diminishes and there is dryness of the mouth and throat.
7. Mobility of the gastro intestinal tract slows or ceases altogether.
8. Muscles tense and tremble.
9. The composition of blood changes. There is an elevation of blood sugar level.
10. Epinephrine is secreted into the blood by adrenal medulla. Epinephrine heightens the blood sugar level, helps the blood to clot more quickly and increases the BP.

Our Autonomic Nervous System (ANS) plays a significant role in controlling and regulating our emotional behavior. It has two divisions: the sympathetic and parasympathetic that work in close cooperation at the time of an emotional experience. E.g., in fear and anger the sympathetic division stimulates the adrenal glands to secrete the hormones adrenaline and non-adrenaline resulting increase in BP

and sugar level of the body. The sympathetic division also causes an enlargement of the pupils, a slowing of salivary glands and contraction of the digestive muscles. The parasympathetic on the other hand activates itself for the rescue operation. It lowers down the BP and heart rate, starts up stomach and intestine mechanisms and finally helps the organism to return to its normal state of behavior.

The sympathetic and parasympathetic divisions of the ANS are supposed to have centers in the hypothalamus. While the stimulation of the posterior area of the hypothalamus increases sympathetic activities leading to excitement and tension, stimulation of the anterior area causes increase in parasympathetic activities leading to relaxation and depression. Hormonal changes also clearly play a crucial role in emotional responses to stress and may contribute to many other emotions as well.

Growing evidence suggests that different emotions are related to contrasting patterns of activation in the cerebral cortex. Research findings suggest that positive feelings may be centered primarily in the left hemisphere while negative ones are centered in the right hemisphere. Recent studies also confirm these findings (EEG studies). Similar findings have been obtained with infants less than three days old. They show greater right-side activation in response to unpleasant tastes and greater left-side activation in response to pleasant ones. There are individual differences in these patterns.

Positive feelings like happiness are associated with greater activation in the left hemisphere while negative ones such as sadness or disgust are associated with greater activation in the right hemisphere.

In addition to ANS, emotions are ultimately controlled in the hypothalamus, amygdala, and adjacent structures in the limbic system have been viewed as the seat of emotions in the brain. Recent evidence suggests that the amygdala plays a particularly central role in the modulation of emotion.

Evidence suggests that certain neurotransmitters like dopamine may play a major role in pleasant emotions, while norepinephrine circuits contribute to the modulation

of arousal. A host of neuropeptide transmitters (protein like molecules used by neurons to communicate each other), including endorphine, also appear to activate and inhibit specific emotions.

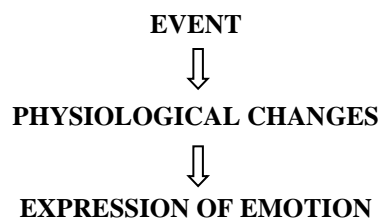
One prominent part of emotional arousal is the electrical conductivity of the skin that occurs when sweat glands increase their activity. GSR is a convenient and sensitive index of autonomic arousal that has been used as a measure of emotion.

The connection between emotion and autonomic arousal provides the basis for the polygraph, or lie detector, a device that records autonomic fluctuations while a subject is questioned. A polygraph cannot actually detect lie. It is really an emotion detector. It monitors key indicators of autonomic arousal, typical heart rate, respiration rate, and GSR. The assumption is that when subject lie, they experience emotion that produces noticeable changes in these physiological indicators.

THEORIES OF EMOTIONS

1. JAMES –LANGE THEORY

According to this theory, subjective emotional experiences are the result of physiological changes within our bodies. In other words, you feel frightened in a stressful situation because you notice that your heart is racing, your mouth is dry and so on. Several studies point to this conclusion. First, studies conducted with modern equipment indicate that different emotions are associated with different patterns of physiological activity. Second, support for this theory is also provided by *facial feedback hypothesis*, which suggests that changes in our facial expressions sometimes produce shifts in our emotional experiences. In addition other research suggests that changing our bodily postures or even the tone of our voices can influence our emotional experiences.



James statement-'we feel sorry because we cry, angry because we strike, afraid because we tremble'. James and Lange took the view that the instinctive response of crying at a loss leads us to feel sorrow; that striking out at someone who frustrates us results in our feeling of anger. They suggested that for every major emotion there is an accompanying physiological reaction of internal organs called visceral response that leads us to label the emotional experience.

Criticisms

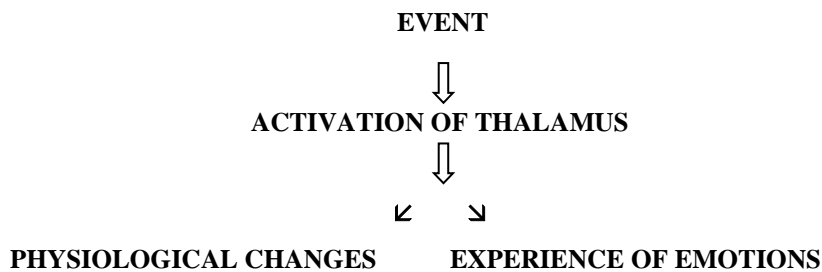
1. If the theory is valid, visceral changes would have to occur at a relatively rapid pace since we experience some emotions-such as fear upon hearing a stranger rapidly approaching on a dark night- almost instantaneously. Yet emotional experience frequently occurs even before there is time for certain physiological changes to be set into motion. Because of the slowness with which some visceral changes take place, it is hard to see how they could be the source of immediate emotional experience.

2. The James-Lange theory poses another difficulty. Physiological arousal does not invariably produce emotional experience. E.g. a person who is jogging has an increased heartbeat and respiration rate etc. yet joggers do not typically think of such changes in terms of emotions. There cannot be a one to one correspondence between visceral changes and emotional experience.

3. Finally our internal organs produce a relatively limited range of sensations. Although some types of physiological changes are associated with specific emotional experiences; it is difficult to imagine how the range of emotions that people are capable of experiencing could be the result of unique visceral changes. Many emotions are actually associated with relatively similar sorts of visceral changes - a fact that contradicts the James-Lange theory.

2. CANNON-BARD THEORY:

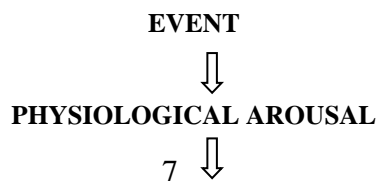
This theory suggests that various emotion-provoking events induce simultaneously the subjective experiences of emotions and the physiological reactions. A stressful event cause you to experience a racing heart, a dry mouth and other signs of physiological arousal and at the same time, to experience subjective feelings you label as fear. In other words, this situation stimulates various portions of your nervous systems especially thalamus and hypothalamus. After perceiving the stimulus the sensory impulses reach the thalamus-hypothalamus regions. From there, they are carried simultaneously to the internal organs of the body and the cerebral cortex. The cerebral cortex receives and experiences emotions at the same time the physical changes are occurring in the body. Thus cannon-bard theory says that emotion and physiological responses occur simultaneously not one after another.



E.g. we perceive the bear we run and are afraid, i.e., emotional response and emotional experience preceding the other.

3. COGNITIVE THEORY (SCHACHTER-SINGER THEORY OR TWO FACTOR THEORY):

About 1970 the American psychologists Stanby Schachter and Jerome Singer introduced a new theory known as cognitive theory of emotions. They suggested that our physical arousal together with our perception and judgment of situation (cognition) jointly determine which emotions we feel. In other words on both physiological changes and the cognitive or mental interpretation of these changes. The sequence of event is:



EVALUATION OR APPRAISAL OF STIMULI



LABELLING THE AROUSED STATE



EXPERIENCE OF EMOTION

Thus the theory points out that the cognitive factors are the potent determiners of our emotional states.

4. ACTIVATION THEORY:

The term activation theory of emotion was coined by Donald B. Lindsley in 1951. According to this theory, emotions represent a state of heightened arousal rather than a unique type of psychological, physiological or behavioral process. Arousal can range from a very low level like deep sleep to extremely agitated state like rage or extreme anger.

According to Lindsley, emotion provoking stimulus activate the reticular activating system in the brainstem which in turn sends impulses both upward toward the cortex and downward toward the reticular system must be properly stimulated. However the reticular system serves only a general emergency function. It is the specific structures in the brain, which organize the input and determine the particular form of emotional reaction.

5. OPPONENT PROCESS THEORY:

According to this theory, strong emotional reaction is followed by opposite reaction. For example anger is followed by calm. This theory has two main assumptions. 1) Emotional reactions to a stimulus are followed automatically by an opposite reaction. 2) Repeated exposure to a stimulus causes the initial reaction to weaken and the opponent reaction to strengthen.

Opponent-process theory provides important insights into drug addiction. For example, heroin users initially experience intense pleasure followed by unpleasant sensations of withdrawal. With repeated use of the drug, the pleasure becomes less

intense and the unpleasant withdrawal reactions strengthen. In sum, emotional reaction often occurs in action-reaction cycles and many forms of behavior can be interpreted within this framework.

6. A FACIAL FEEDBACK THEORY:

Psychologist Carrol Izard (1977) was the first to suggest that the face does, indeed, affect emotions. Facial feedback hypothesis asserts that facial muscles send signals to the brain and that these signals help the brain recognize the emotion that one is experiencing.

Later Paul Ekman (1984), a leading researcher on the nature of facial expressions, proposed that *making faces* could actually cause emotion. According to him not only emotions determine expressions, but expressions may determine emotions. For example, when you are feeling *down*, forcing yourself to smile will sometimes be followed by an actual improvement in your mood. Thus Ekman believes that those expressions are produced rapidly and automatically and that sensory feedback from the expression contributes to the emotional feeling.

7. BRAIN-BASED THEORY OF EMOTION:

According to this theory, the amygdala, a portion of the limbic system, and the frontal lobe of the cerebral cortex are essential to the generation and experience of emotion. The amygdala receives sensory information about the external environment that involves the sensory and perception areas of the cerebral cortex. The amygdala is critical in the evaluating the emotional significance of that sensory input and generating immediate bodily reactions. It also sends output to the frontal lobes of the cortex, which are critical in experiencing the emotions consciously and developing the more deliberate behavioral responses. The model also shows that feedback from the bodily responses might act both in the amygdala and the frontal lobe of the cortex to modify the emotion.

According to this theory, the amygdala plays a central role in assessing the emotional significance of stimuli and generating some of the body's immediate responses; and the frontal lobe is crucial for the conscious experience of emotion and initiation of the more deliberate, controlled aspects of emotional behavior. Lesion studies show that animals no longer responded fearfully to the objects that previously frightened them, or aggressively to objects that previously angered them.

EXPRESSION OF EMOTION

Emotions are always accompanied with many physical and physiological changes in an organism. Some of these changes expressed in overt behavior are easily observable while the internal changes require special devices for their proper measurement.

Emotions are subjective in nature. When an individual experiences an emotion, there are changes in facial expressions, eye contact, posture, touching, movements of hands, changes in the voice, etc.

Facial expression: Face is considered as the mirror of our mind. The feelings and emotions are often reflected in the face and can be read there from specific

expressions. For eg., when you are angry, generally you hold your jaws tight, your nostrils flare, and eyes become big and so on. Most of the emotions have typical facial expressions. From an early age on the human face six different basic emotions are represented very clearly. These are anger, fear, sadness, disgust, happiness and surprise. Emotions usually occur in combinations. Eg., anger along with fear or surprise combined with happiness.

Gazes and stares: Eyes are considered as windows to the soul. We can always understand other's feelings from their eyes. For example, a high level of gazing from another is a sign of liking. Avoiding eye contact is an indication of unfriendliness or shyness. Stares are often interpreted as sign of anger or hostility and most people avoid this kind of nonverbal cue as far as possible.

Voice: when a person is experiencing emotions his voice gets affected. When we are afraid voice becomes soft and low in its tone and when we are angry it generally becomes loud and high pitched.

Touching: It has different meanings depending on several factors relating to who does the touching- a friend or a stranger, a member of your own sex, the nature of touching- brief or prolonged, gentle or rough and the context in which it takes place- a business or social setting, a doctor's office, etc. Depending on these factors, touch can indicate affection, sexual interest, dominance, caring or aggression.

Body language: gestures, posture and movement

Body language is a type of nonverbal communication in which physical behaviors, as opposed to words, are used to express or convey the information. Such behavior includes facial expressions, **body posture**, gestures, eye movement, touch and the use of space. Our current mood or emotion is often reflected in the posture and movement of our body. Together such nonverbal behaviors are sometimes termed body language they can provide several kinds of information about others emotions.

Frequent body movements like touching, scratching or rubbing suggest emotional arousal. The greater the frequency of such behavior the higher a person's level of arousal or nervousness seems to be. When you are too excited while narrating something you tend to shake hand, shoulders etc.

More specific information about others feeling is often provided by *gestures* - body movements carrying specific meanings in a given culture. For example, in several countries holding one's hand with thumb pointing up is sign of okay. Gestures vary from one culture to another.