EMOTIONS

By

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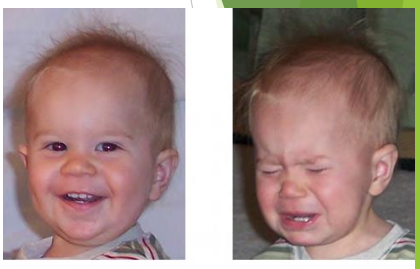
Learned objectives

- Definition of Emotion.
- Components and Classifications of Emotion.
- Theories of Emotion.
- Disorders of Emotion.

Definition

- Emotions are complex responses, which are triggered and aroused by external events.
- Emotions are temporary stirred up states of the individual due to physiological and psychological changes, which occur as a complex response to external events.
- The word emotion indicates a subjective, affective state that is relatively intense and that occurs in response to something we experience (**Figure**). Emotions are often thought to be consciously experienced and intentional.
- Mood, on the other hand, refers to a prolonged, less intense, affective state that does not occur in response to something we experience.
- Mood states may not be consciously recognized and do not carry the intentionality that is associated with emotion



(a) (b)

Toddlers can cycle through emotions quickly, being (a) extremely happy one moment and (b) extremely sad the next.

Definition

- **Emotion is a response produced by the human being as he reacts with his environment.**
- **Our emotional states are combinations of physiological arousal, psychological appraisal, and subjective experiences**
- **Emotion is a reaction that includes the subjective experience of a feeling , a cognitive interpretation , and internal physiological reaction and some behavioral expression.**

Dimensions (Components) of emotion

There are 4 dimensions of emotion :

- **Subjective** (=feeling , affect ,*Sensory or experience)* : joy , anger
- **Cognitive** (=Motivational) interpretation or appraisal that a particular positive or negative event is occurring . **i.e.** Knowing, interpreting and recognizing of the type of the emotions.
- **Motor** (= expression = body component) :Bodily or physiological reactions particularly those involving the autonomic nervous system .
- **Expression or behavioral response:** anger may lead to aggression, sadness may lead to crying, and joy may lead to smiling.

Classifying emotion

We have two classifications:

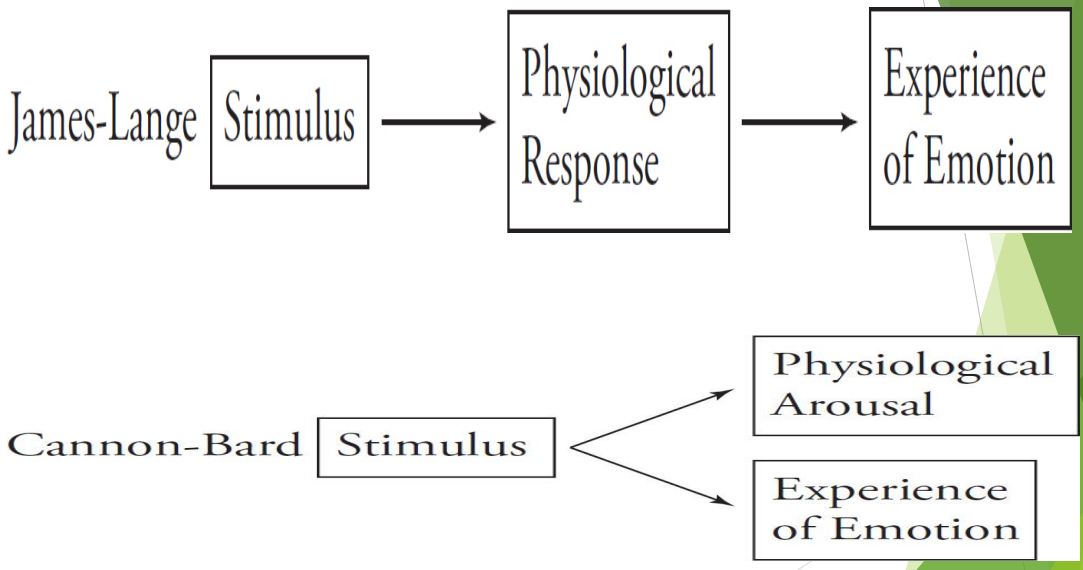
- One classification is based on <u>the subjective feeling component</u>. We have primary emotions and each emotion is associated with a life situations:

Anger	Looking of a goal- directed behavior.
Fear	A threat or danger
Sadness	Loss of something valued
Joy	potential mate

- The second classification emphasizes **cognitive processes**. Cognitive activity is a necessary precondition of emotion. You can not feel afraid without knowing it.

- This approach is more appropriate for humans than for lower species.

Theories of emotions



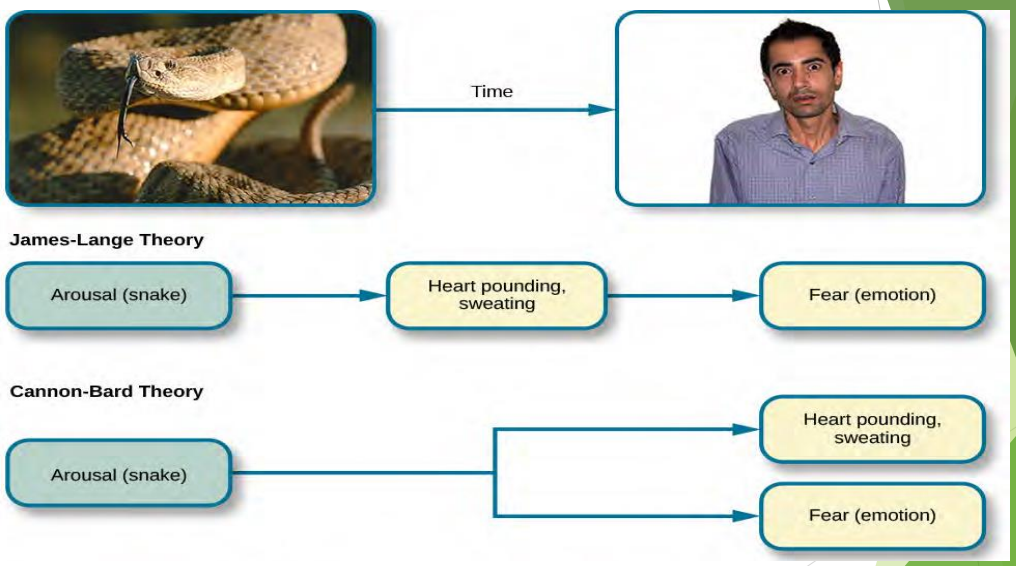
James-Lange theory (peripheralist theory)

The James-Lange theory states that each emotion is caused by a specific physical response to a stimulus, i.e. before we can experience different emotions we have to experience different 'bodily changes'.

The Cannon Bard Theory

- The Canon-Bard theory of emotion suggests that Emotion (and stress) are direct expression of central brain systems.

- Emotion is produced when an event or an object is perceived by the thalamus which then conveys the relevant information simultaneously to the cerebral cortex and to the skeletal muscles and autonomic nervous system.



Sigmund Freud theory

- Sigmund Freud believed that mental illness came from repressed emotions in the unconscious mind.
- Freud believed that release and acceptance of these denied or repressed emotions or memories were vital for mental health. If this emotional energy were not released, Freud noted that it led to physiological illness and symptoms. He termed these physiological manifestations of emotions "psychosomatic".
- Severe psychosomatic cases of repressed memories of trauma led to a diagnosis of "hysteria".

Cognitive theory

- When we experience an event or action , we interpret the situation .
- This interpretation is known as a cognitive appraisal . the outcome of the appraisal is either positive or negative (" I won the match and I happy "or" I failed the test and I feel depressed ")
- Thus cognitive appraisal is responsible for differentiating the emotions . Unlike autonomic arousal , the beliefs resulting from appraisal are rich enough to distinguish among different kinds of feelings .

To sum up :

1. **Physiological arousal** contributes to the intensity of emotional experience .

2. **Cognitive appraisals** differentiate emotional experiences.

Anatomical basis of emotions :
Papez - Maclean circuit

External events **stimulate** afferent sensory tracts that **stimulate** the reticular activating system , which in turn **stimulates** the psycho sensory areas of the cerebral cortex .

The cerebral cortex **responds via** associated fibers that pass to :

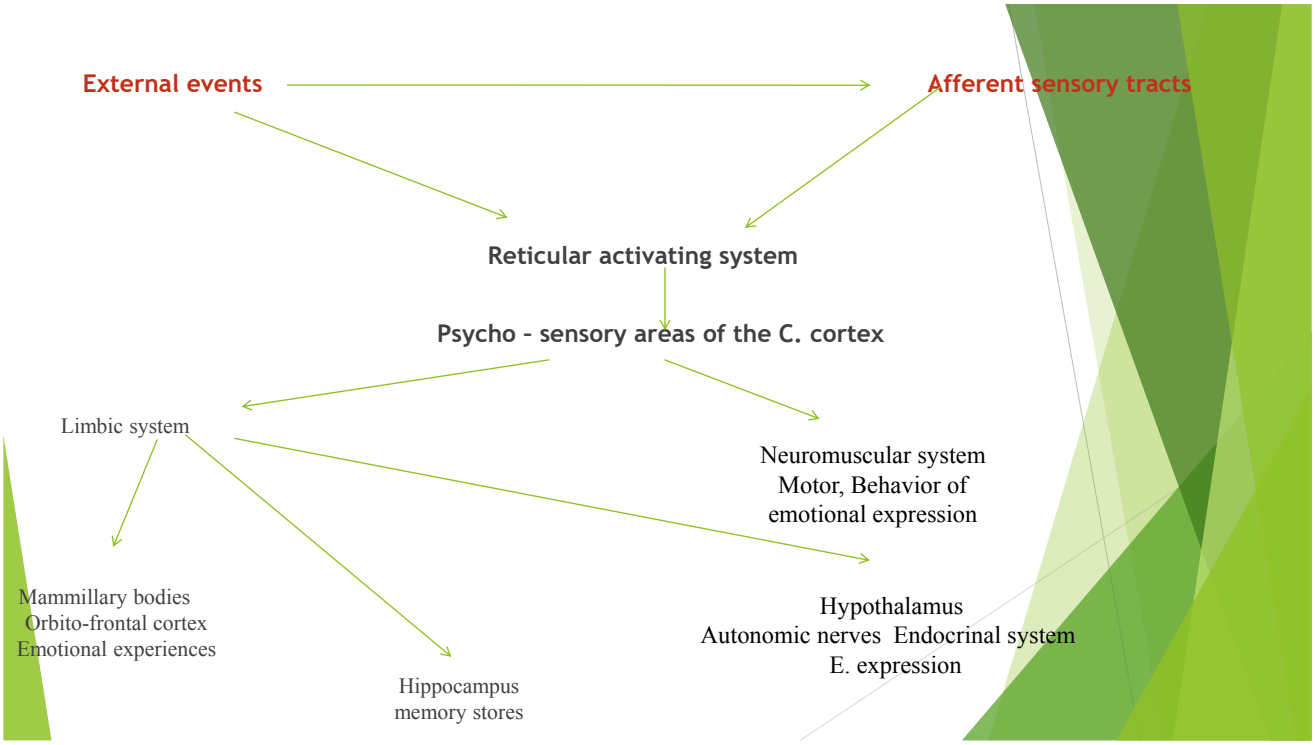
1. **Neuromuscular system:** producing motor behavior (emotional expression),

2. **Limbic system :** here we have three relay areas

A. Mammillary bodies which project to mammillary thalamic tract to orbito – frontal cortex producing emotional experience

B . Hippocampus projecting to the memory stores where the emotional experience is being registered and decoded .

C . Hypothalamus projecting to the autonomic nervous system and neuroendocrinal system through the hypothalamic hypophyseal adrenal axis. Both are responsible for emotional expression .



Biochemical Background of Emotions

- **Neurotransmitters , peptides and hormones are involved in mediation of emotions.**

- **Evidence is Antidepressants and antianxiety drugs can change anxiety and depressive emotions.**

To sum up :

1. Physiological arousal contributes to the intensity of emotional experience .

2. Cognitive appraisals differentiate emotional experiences.

- **Emotional responses:**

1. Are carried out by the Hypothalamus.

2. Refined and controlled by the Limbic system.

3. Modulated and integrated by the orbito-frontal cortex.

4. Requires level of awareness (RAS).

5. Involvement of the endocrine glands.

6. Involvement of the neurotransmitters and neuropeptides.

Physiological changes associated with emotions

1.Autonomic nervous system manifestations

Emotions and G.I.T.:

- **When you are angry** there is congestion of the mucous membrane, increased secretion and increased mobility.

- **When you are depressed** there is pallor of the mucous membrane, decrease in secretion and decrease in mobility.

Emotion and smooth muscles:

- According to whether the sympathetic or parasympathetic system is Stimulated we get either relaxation or contraction.

Emotions and cardiovascular system:

- On exposure to stress there is increase in the cardiac output, blood Pressure and heart rate.

Emotions and renal functions:

- In state of tension there is decrease in water and salt retention.
- In state of excitement there is increase diuresis associated with Increased sodium and potassium ions.
- In state of depression there is retention of water and intracellular Sodium.
- These effects are mediated through the hypothalamus or posterior Pituitary (antidiuretic hormone) and mineralocorticoids.

Emotions and blood changes:

- In response to fear and anger there is increase in blood viscosity , and decrease in clotting and prothrombin time .

Emotions and endocrine system:

- In response to stress there is increase in the secretion of ACTH, Which simulates the hypothalamo – hypophyseal adrenal axis and leads to the secretion of hydrocortisone. This again leads to increase in the secretion of adrenaline via the suprarenal medulla .

Emotions and respiratory functions :

- **Anxiety** leads to increase in respiratory rate, which may lead to hyperventilation (air hunger) .
- **Depression** leads to decrease in rate of respiration. Bronchospasm can develop as a result of stress.

Others:

- **Stress** leads to increase in sweat gland activity, decrease in salivary secretion and dilation of pupils .

- **Application of the autonomic manifestations of emotions in the field of psychiatry:**

1. Lie detector.
2. Psychophysiological measurements.
3. Biofeedback training.

2.Neuromuscular manifestations

- Increased motor tension leads to prolonged isometric contraction phase.

This may lead to pain, headache, etc.

3.CNS manifestations (The role of the brain)

- These activities of the autonomic nervous system are triggered by activity in certain regions of the brain including the hypothalamus and parts of the limbic system.
- The cerebral cortex (frontal lobe) is responsible for the cognitive and integrative part of emotions.

I. The hypothalamus

- It is responsible for emotional expression since it controls the autonomic nervous system through its connection with the pituitary via the hypothalamic-hypophysial adrenal axis.
- The hypothalamus is very involved in many motivational states.
- Strong emotional reactions can be produced by hypothalamic stimulations including reactions that lead to attacking and killing.
- Lesion of the medial part of the hypothalamus leads to sham rage reactions.
- Lesion of the posterior part of the hypothalamus leads to abolition of emotional reaction.

II. Limbic system

- **Removal of the limbic system from higher control** leads to exaggerated pleasure-seeking emotional behavior.
- **Removal of the amygdala** leads to placidity.

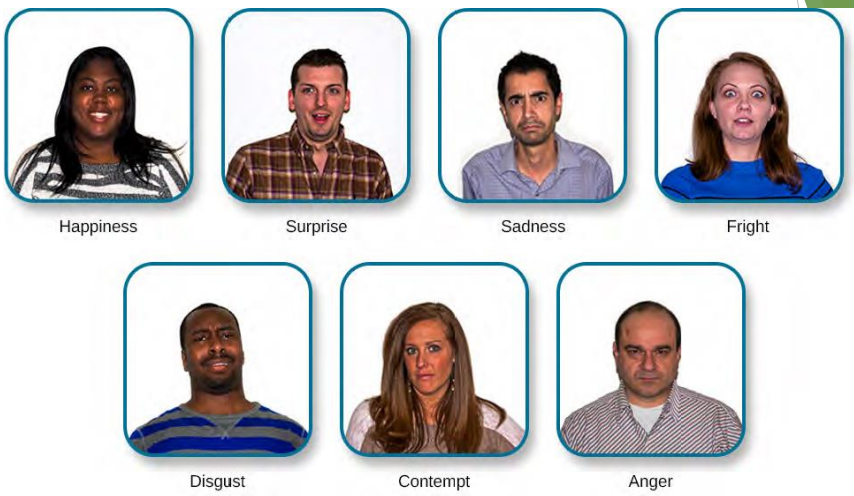
III. Cerebral cortex (frontal lobe)

- **Its role is inhibitory**, that is, the limbic system and hypothalamus seem to act as the sources for extreme and poorly directed emotional reactions, the cortex modifies and directs the emotional reactions.
- **It is responsible for** the cognitive aspect of emotional responses i,e. the interpretation and memory of emotional events.

Lesions in the frontal lobe leads to:

- Silly behavior.
- Euphoria and emotional incontinence.
- Excessive sexual demands.
- Loss of feelings of fear and anxiety.
- The emotional reactions tend to be processed more in the right hemisphere.

Disturbances of emotions



The seven universal facial expressions of emotion are shown.
The seven universal emotions that are each associated with distinct facial expressions.
These include: happiness, surprise, sadness, fright, disgust, contempt, and anger

I. Pleasant emotions

1. Euphoria: this is a subjective feeling of well-being.

Causes: syphilis, multiple sclerosis, frontal lobe minor, mania, hypomania.

2. Elation: Enjoyment and self-confidence that is radiating and infective.

This occurs in mania and hypomania.

3. Exaltation: Intensive elation accompanied by a feeling of grandiosity.

This occurs in mania, hypomania, and schizophrenia.

4. Ecstasy: Sense of tranquillity and power associated with a sense of internal peace. It occurs in epilepsy, hysteria, schizophrenia, affective disorders and religious settings.

II. Unpleasant emotions:

1. **Grief:** This sadness secondary to loss of a love object.

2. **Depression:** This is a feeling of unhappiness, hopelessness, helplessness associated with guilt feelings, lack of appetite, lack of concentration and insomnia. It occurs in affective disorders (depression) and some other physical and mental disorders.

3. **Anxiety:** This is a feeling of apprehension and fear associated with increased activity of autonomic nervous system, It occurs in anxiety disorders, thyrotoxicosis, hypoglycemia and may be associated with several physical and mental disorders.

III. Inadequate or flat emotions:

1. **Emotional dulling.**
2. **Apathy.**
3. **Indifference.**

The patient does not respond to any emotional arousal and will not seem concerned with any sad or happy event-taking place.

IV. Incongruous or inappropriate emotions:

- This is disharmony in the emotions like laughing in sad situations or crying with no apparent reason.
- It occurs in schizophrenia and in some physical diseases.

V. Depersonalization:

- It is an unpleasant awareness of changes in oneself associated with a sense of change in the environment (derealization).
- It occurs in anxiety, hysteria, depression, schizophrenia and physical illness and under the effect of hashish or LSD.

VI. Psychosomatic disorders:

- If emotional states are exaggerated or prolonged, they may affect various organs and produce lesions in those organs like gastric ulcer or skin diseases.

THANK YOU