

# A Theoretical Approach to Define and Analyze Emotions

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**ABSTRACT: Background:** *This study endeavours to define and analyze one of the most important faculty of human mind 'emotion'. The 'emotion' is a specific sensation or feeling in the mind that provides directional drive to the other faculties of the mind - memory, intelligence, and physical activities - for their actions to be performed to pursue a specific goal. It should be astutely differentiated from 'mood', as 'mood' is the 'energy level' of the mind at a given particular moment. As a power house of the mind, the centers for 'mood' not only stimulate the activities of the faculty of emotion, but activities of other mental faculties - 'memory', 'intelligence', and 'physical activities' also. Emotion can be logically represented on 'Pleasure and Pain' or 'Positive and Negative' scale. That means every emotion has both these two ends. That is true for the emotion like, 'anger', 'fear' also. The concept of primary and secondary emotions does not exist. Every emotion has been developed as a trait in the process of 'biological evolution', and they all have survival roles. Thus all emotions are physiologically distinct, different, and could be both qualitatively and quantitatively determined.*

**KEYWORDS:** *Emotions, Mood, Affect, Cognition, Perception, Depression*

## INTRODUCTION

There is no consensus on the definition of 'emotion'. Considering so many definitions of 'emotion', Kleinginna attempted to arrive at a comprehensive definition of 'emotion'. They stated, 'emotion' should (1) say something about the way we feel when we are emotional; (2) mention the physiological, or bodily, basis of emotional feelings; (3) include the effects of emotion on perception, thinking, and behaviour; (4) point out the driving, or motivational properties of certain emotions such as fear and anger; and (5) refer to the ways in which emotions are expressed in language, facial expressions, and gestures (Kleinginna & Kleinginna, 1981).

Charles Darwin in his book 'The Expression of the emotions in Man and Animals' claimed that 'emotion' acts as a trait to help in the purpose of communication, thus aids in the survival of species. In his work, Darwin tried to explain how some expressions of the emotion evolved into serviceable habits to man and animals, as he said, "raising of eyebrows serves to increase the field of vision". Some expressions act out in behaviours which are opposite in habits in two different ends. Like, a dog shows joy by elevating and wagging his tail. And inverse occurs when his tail droops in dejection. Darwin called them antithesis. And there is a third principle in his work, where expression of certain states of mind is the direct result of the constitution of the nervous system, independent of the will of the organism.

The concept of primary and secondary emotions was postulated

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by John B Watson. From his studies on infants, Watson concluded that there were three innate emotional reactions - 'fear', 'anger', and 'rage'. Other secondary emotions are developed from these after in life by conditioning processes, like primary and secondary colours (Watson, 1920). Ekman, Izard, Panksepp and Plutchik also support the idea that there are some basic emotions from which complex emotions develop (Ekman, 1992, 1999; Izard, 1992; Panksepp, 1992; Plutchik, 1980). However the concept of primary and secondary emotions are not supported by all (Ortony & Turner, 1992; Das).

'Emotion' has often been intertwined with 'mood' in literature, as 'mood' has been defined as a "sustained emotion or feeling tone that colors a person's perception of being in the world" (Saddock & Ruiz, 2015). Alternatively it has been defined as "feelings that tend to be less intense than emotions and that often (though not always) lack a contextual stimulus" (Weiss & Cropanzano, 1996); or "longer term affective states that do not have unique facial signature or eliciting conditions" (Ekman, 1994).

## THEORIES OF EMOTIONS

One of the earliest theories of emotion was stated by psychologist William James. He cited "We feel sorry because we cry, angry because we strike, afraid because we tremble". This theory, forwarded by William James and Carl Lange in late nineteenth century, popularly known as James-Lange theory, proposes the sequence of events in emotional states - (1) we perceive the situation that will produce emotion; (2) we react to this situation; (3) we notice our reaction.

For this theory to work, there must be a set of internal and external physical changes that we are able to perceive and react against that as an expression of emotion. But James-Lange theory is questioned on various points, as all our bodily changes are not acute and there are different patterns of physical responses against certain emotions.

In 1920, another theory involving relationship between physical changes and emotion was proposed by Walter Cannon based upon researches done by Philip Bard, which is known as Cannon-Bard theory. It states that physical changes and emotional feelings are independent to each other, and they are triggered by stimuli simultaneously. According to this theory (1) we detect what will be an emotion-arousing event through any of our senses. (2) that detection is relayed to the lower brain areas e.g. the hypothalamus - where the signal is split. (3) one signal goes to the cerebral cortex where it is perceived as felt emotion. (4) another signal causes appropriate bodily reactions expressing the emotion. However, not universally all adhered to this theory. Other investigators also argued that there is nothing specific in emotional experience. Hebb quoted, "emotional experience is a highly variable state and often partakes of the complicated nature of a judgement" (Hebb, 1949).

Schachter and Singer (1962) argued that the bodily state of emotional arousal is much the same for most of the emotions we feel, and that even if there are physiological differences in the body's patterns of responses, people cannot perceive them. According to their theory, people have different subjectivities to their felt emotions because they differ in the way they interpret or label the physiological state. In other words, in a given state of arousal, we experience the emotion that seems appropriate to the situation in which we find ourselves (Schachter & Singer, 1962). But Schachter-Singer theory has not been widely supported in different experimental studies (Maslach, 1979; Marshall & Zimbardo, 1979).

Traditionally, emotion and cognition have been considered two different faculties and have been put to correspond 'feeling' and 'thinking'. This distinction is however thought orthogonal (Clore et al., 2005). Richard Lazarus and his co-workers forwarded their cognitive appraisal theory of emotion. They state, the emotions we feel result from appraisals or evaluation of information. This appraisal involves processing of information coming from the environment, the body and memory (Lazarus et al., 1970, 1984). According to Aaron T Beck's cognitive model, 'emotion' is an integral part of the triad of 'thoughts', 'emotions' and 'behaviour'. The cognitive appraisal of internal or external stimuli influences the other systems also (Beck, 1976). Cognitive therapy, which developed upon this theory, targets to correct the distortion of this triad to obtain a more adaptive and sustainable form.

Efforts to understand what renders information as efficacious emotional responses has engendered several theories. One such theory is category-specific activation of sensorimotor cortices and causing retrieval of information associated with a specific sensory modality (Barsalou, 1999). Another theory is recognition of motor simulations, as infants can recognize cross-modal equivalences between acts they see in others to perform and their own felt bodily movements (Metzoff, 2002; Gallese, 2005). These theories emphasize on the concept of "embodied cognition". Cognition is

embodied means it arises from the bodily interactions with the environment. And from that point of view, cognition is depended on the kinds of experiences which come from having a body with particular perceptual and motor capacities, together forming a matrix within which memory, emotion, language, and all other aspects of life are embedded (Thelen E, 2001). Emotion processing also involves embodiment, where embodiment occurs both when an emotion eliciting object is physically present to the perceiver and when the object is referred by internal (thoughts) or external symbols (e.g., words) (Niedenthal et al., 2005).

Besides the problems of representing information in emotional processes, there are concern about the structures of the involved information. These structures may range from simple stimulus-response to elaborate multimodal networks of associations, abstract meanings and inferences (Frizda, 2008). Researches have demonstrated how very elementary information can on occasion be emotionally effective (Zajonc, 1980), and how complex emotional information often does not immediately appear as because they operate nonconsciously (Clore et al., 2005).

There is a strong relationship between 'motivation' and 'emotion'. Leeper says that almost all of our sustained and goal directed behaviour are emotionally toned. He emphasized 'emotions' on their role as motives, that is in arousing and sustaining activities in producing exploratory reactions, in facilitating learning and in governing performance (Leeper, 1970). Tomkins says that emotions provide the energy for motives. He cites that motives or drives simply tell us about some need or condition of the body. Emotions, being accompanied with them, provide the necessary energy for the drives, and amplify the drives to give them their strong motivational power (Tomkins, 1970, 1981). Solomon and Corbit propounded their opponent-process theory, which takes a hedonistic view on motivation. They say that we are motivated to seek goals which give us good emotional feelings or pleasure and avoid those things which bring to us unpleasurable sensations or bad emotional feelings (Solomon & Corbit, 1974).

## **A NEW APPROACH TO DEFINE AND ANALYZE EMOTIONS IN THIS STUDY**

According to this study, 'emotion' could be defined as "a specific sensation or feeling in the mind that provides directional drive to the other faculties of the mind - memory, intelligence, and physical activities - for their actions to be performed to pursue a specific goal".

All emotions are physiologically and anatomically distinct, different, and could be both qualitatively and quantitatively determined. There is no existence of the idea of primary or secondary emotions. But emotions vary in their magnitude along with their importance, as they have been developed in the course of biological evolution.

## **ORIGIN OF EMOTIONS**

All emotions have been developed in the course of biological evolution. And they have been developed to serve the need of survival purposes.

No organism upon this world survive for being the fittest, their only goal is to serve their emotions. 'Survival of the fittest' is an outcome of it. As, emotions are set to pursue the specific goal "self-preservation and propagation of the species". It could not be otherwise, because in those cases, the species would have been extinct. So it is self-explanatory.

We eat to satisfy our 'hunger' emotion, not to preserve the body. The preservation of the body is the result. An organism could be happy and satisfied without procreating, but only serving its emotions adequately; as it is evident in case of many domesticated pets. Man is nothing but an animal, and no exception to that rule, if only not knowledge does bother him.

But again, our cognition leads our mind to the final consequence, and by that is responsible for arousal of emotions in direct and indirect manner, which have been stated later. For a simple example, 'if we do not eat, we will be sick or even may die', thinking of that consequence arouses 'fear' emotion which compels us to eat. In case of animals it may be irrelevant. Absence of 'hunger' emotion may lead to their death.

Now first of all, we will come to the facts what different emotions we do possess, and what are their survival roles. Let us examine one by one.

'Hunger' and 'Sex', two of our basic emotions, which are responsible for maintaining body of the organism and preservation of the species.

'Fear' is essential to avoid things that have overpowering effect against our existence. The 'fear' protects the species from the harmful effect of something, either living or non-living, which is regarded by it as more powerful than it. Its opposite end is 'courage' or 'valour'.

'Anger' prepares us to challenge our enemies, with utilizing best of our physical and mental resources - to defeat them. The 'Anger' provides killing instinct in the species against something, either living or non-living, which is regarded by it as less powerful than it. Its opposite end is 'revenge satisfaction'.

'Love' is responsible for caring our weak offspring in the initial stage of development, and essential for preservation of the species. It also applies to protect the opposite weaker sex, and to have fellow-feelings towards other members of the group. Because, most of the higher animals including man are gregarious in nature. This gregarious quality helps in chance of survival better. Because, survival against powerful enemies depend partly on co-operative actions of the group members. And 'love', to some extent, helps to form inter-personal bonding of the group members to act jointly. Its opposite end is 'bereavement'.

These above mentioned emotions are primitive and found both in animals and man. But in case of man, many finer emotions have been developed, all of which have not been evolved in every animal. Now let us examine them.

The emotion 'Hope' triggers to enhance our organized activities, mental and physical, towards specific goal or goals. Its opposite end is 'Despair'. 'Despair' temporarily stalls or slows our activities. But in this situation, our subconscious mind remain active, involving greatly to find out new routes for achievement.

Our 'sense of beauty', sensitizes us for cleanliness, to adore those things that have positive effects on our health, and also helps us in selection of healthy eligible opposite sex. In its opposite end, it makes us dislike things those are unhealthy in nature. Sometimes we describe something as being 'ugly', though that particular thing does not have deleterious effect on health. But here, the sight of that, somehow, has been conditioned with some object, living or non-living, which has negative or harmful effect on our health, in the earlier stage of our life.

'Disgust' makes us keep away from living organisms or non-living objects, that either are sticky and creepy in nature, or produces harmful effects on our body or mind. In its opposite extremity, we get informed that the object has beneficial effect on our body or mind, and we get attracted to it. Like being in open nature, sea side, or getting attracted to clean environment.

'Joy' informs us that the situation or surroundings or environment is favourable for us, and encourages us to be involved in maximum activities in that period. In its opposite end 'sadness', the emotion informs us that the environment is unfavourable, and discourages us to take activities, to preserve potentials.

'Laughter' makes us forget temporarily the stress situation. It lightens our serious thinking to get out of the harmful effect of stressful condition that we live in for that period of time. In its opposite end, we feel gloomy or burdensome pedantic graveness.

'Shame' or 'Embarrassment' informs us that surrounding is unfavorable and un-encouraging for exposing us or doing activities, and so restricts our activities and tries to hide our bodily preserve. In its opposite end lies 'feeling of confidence'.

'Surprise' prepares us to adapt with the sudden change in the environment. It is very essential for adaptation in all aspects, physical and mental, when the surroundings suddenly turn to be different. In its opposite end lies 'boredom', when the environment is changeless.

'Curiosity' urges us to know the unknown. So that, this could prepare us taking challenges from unknown quarters, that yet has not been experienced. Also it helps us to seek prospect of benefit from unknown quarter. Curious nature is seen in many animals also, for the sake of the same reason, either in detecting danger or in searching food. In its opposite end lies 'monotony'.

'Utsaha' or 'Liking to do specific job' - it encourages us to do specific job. It is equivalent with zeal, zest, enthusiasm, or eagerness to do something.

Some of our primitive men, learned to draw realistically, or produce a musical sound by voice or by an inanimate object, that brought pleasurable sensations to human eyes and ears; and discovered that these traits were being appreciated by his other group mates. Not only that, they soon followed that these traits were helping them to acquire their basic needs, being supplied by the other members of the group. So they gradually developed intense liking for that particular job. The human achievements in arts, literature, science, and music followed.

Emotion 'Utsaha (= enthusiasm)' or 'liking to do specific job' is applicable to any work, that directly or indirectly can serve our needs, that is food, shelter, sex, and others. In the other end, we are

averse to do some works, which, neither directly nor indirectly, are related to our requirements. Here we sense, consciously or subconsciously, that those works would not bring any benefit to us, or provide for our needs. Sometimes, a person may not feel to do some mechanical job, even if it brings money or other benefits to him. In that case, it should be realized that, it does not happen in all the cases. It happens particularly in those cases, when the subject's mind, either conscious or subconscious, informs him that his mind has greater potentiality to achieve better.

## EMOTION AND MOOD

'Emotion' has often been confused with the notion of 'mood'. But 'mood' should be astutely differentiated from 'emotion'. 'Mood' is the power or energy level of the mind at a particular moment. As a power house of the mind, the centers of mood stimulate the activities not only of the faculty of 'emotion' but also of the other three faculties of mind - 'memory', 'intelligence', and 'physical activities'. In elated mood the activities of all four of these faculties are increased. As in elated mood we can memorize better, (as in study) - helping memory; solve a problem more earnestly - helping intelligence, engage in intense emotional activities (as to play the piano to the best of the ability) - helping emotion; and perform physical activities in greater magnitude (as to run a mile to the best of the time) - helping physical ability. When 'mood' is degraded or depressed the activities of all the faculties are diminished. Normally in our day-to-day life, our mind contains the middle amount of energy with minor variations within acceptable limits. But when there is marked variations of the state of energy of the mind, it causes enough distress. And the person when incapable to cope with this, usually seeks medical or other advice.

In a gravely depressed mind, there is a serious lack of energy, that may restrict doing even normal basic daily activities. In an elated mind, though there is a large amount of energy, by which he can do a lot of works, yet too much excess of this energy may present in some form of distress that is undesirable.

These are - 1) Increased psychomotor activity, ranging from overactivity to restlessness; 2) Increased sense of psychological well-being not in keeping with the reality; 3) Delusion of grandeur; 4) Delirious or stuporous mania.

The person is more talkative than usual. There is marked increase in activity with excessive planning and at times the person tries to do many things at one time. Sleep is reduced and hypersexuality may occur.

Now what causes elevation or depression of mood in a normal person, that means if there is no pathology underlying it? "Positive thinking causes mood elevation or elation, and negative thinking causes mood degradation or depression".

The question comes, 'positive thinking' or 'negative thinking' about what? To be stated in simple words, 'positive thinking' means thinking about the probability of satisfying an emotion; or probability of creating an emotional response positiveness on any emotion scale, so that the adaptive range (AR) may have the chance to slide positiveness on that emotion scale (discussed elaborately later). And in a case of 'negative thinking', the vice versa is applied.

In this regard, person's life-philosophy; educational status; social, cultural and family background; cultural beliefs - every thing is important. To think positively, everything mentioned has significant role. If a man has a positive attitude towards everything, that is, if he can make his mind think positively in every situation, he can get out of his depression.

It also follows the rules of evolutionary psychology. When there is negative thinking, that means environment is unfavorable. So the mind as well as mood center gets depressed, sending less energy or stimulation to the neurons of cerebral cortex and limbic cortex, reducing their activity. Had it not happened this way, we would have lost mental energy unnecessarily in unfavorable conditions.

As mood defines the power of the mind, 'sleep and wakefulness' defines the state of activity of our conscious mind. So 'sleep and wakefulness' can be compared with the electric switch, voltage between its two points that provides power can be compared with 'mood', and activities that are done with the electricity can be compared with the activities of four 'houses of mind'. But this switch just does not have an 'off and on' mechanism, but there is a regulator attached with it through which graded power can be supplied.

## CHARACTERISTICS OF EMOTIONS

There are some general and common properties of all of the emotions. These are -

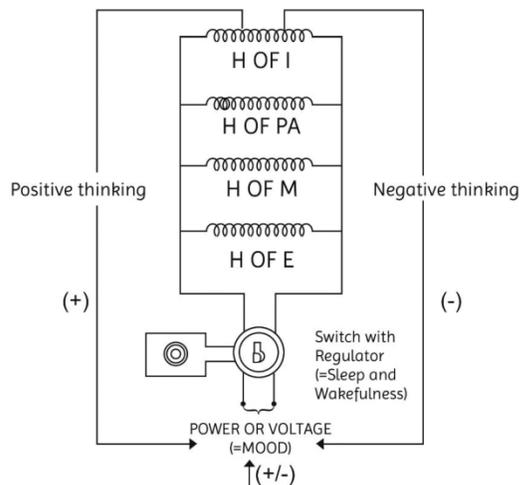
### Location

Every emotion has been developed during the course of evolution of the species. And they are controlled by the specific regions of the brain. Grossly almost all of our emotion-controlling areas are located in the limbic system, that means thalamus, hypothalamus, amygdala, hippocampus, part of basal ganglia and septate nuclei.

Every emotion has two different centers, one controlling pleasure or satiety end and another controlling pain or non-satiety end. Complex biochemical reactions by which emotions are controlled are not known. But between these two extreme ends, emotional scale is maintained.

### Positive and Negative End

As already said, controlled by two mutually distinctive areas, every emotion has two extreme ends on their scale. One negative end or pain end or non-satiety end, and another positive end, or pleasure end, or satiety end (Figure 1). This is also true for the emotions like fear, anger etc. which are usually considered as negative emotions. 'fear' has other positive end of courage, 'anger' has other positive end of revenge satisfaction. But feeling of their positive sides are less frequent compared to their negative sides as we less encounter situations that evoke positive response of them. Think we go to watch movies, to see the revenge action at the end of the movie, even we pay for it, because for that particular moment, the stimulus of stimulus on our 'anger' emotion scale evokes response towards the positive end. Other examples are 'joy and sadness', 'love and bereavement', 'curiosity and boredom', etc.



Different Chemical Substances, Drugs, Alcohol, Melatonin

**Figure 1.** Comparison between Electrical Circuit and Brain. [H=House, I=Intelligence, PA=Physical Activity, M=Memory, E=Emotion]

### Adaptive Point and Range

In any particular moment, our mind experiences all of our emotions. Yet those do not reach to our conscious awareness, because their styluses of stimuli lie on the adaptive point or move within the adaptive range (Figure 2).

When the stylus of the stimulus lies within the adaptive range of the scale, it does not bring any conscious sensation to our mind. We feel a particular emotion only when the stylus of stimulus for that emotion moves beyond the adaptive range, or certain event or situation incites emotional response beyond the adaptive range, either towards the positive end or towards the negative end (Figure 3).

When a stimulus induces a response on the positive side of the scale beyond the adaptive range, it brings pleasurable sensation to us. When the stimulus stimulates on the negative side of the scale away from the adaptive range, it brings unpleasurable sensation to us.

[Note: it is the adaptive point and range, not the midpoint of the emotional scale.]

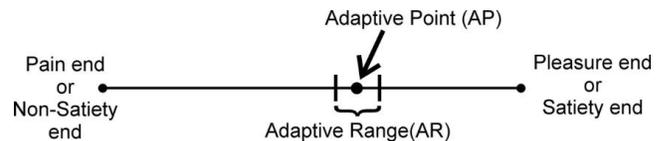
For this reason, same emotional response can bring different sensation in different persons, and even in same person in different time when adaptive range has been shifted.

Here we must know that emotion scale, adaptive point, adaptive range are all representative figures to represent the mechanisms of biochemical reactions of emotions, and like intelligent co-efficient, emotional co-efficient etc., experimentally they all could be illustrated and represented figuratively.

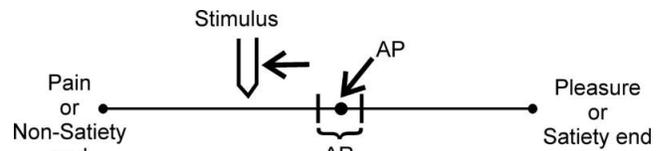
Adaptive point and range for every emotion is not fixed in a person during his life. More happier the person is, when the more displacement and fixation of the ARs of emotions occurs towards the pleasure or satiety end.

Now how is this adaptive range formed?

It depends on how much we are compromising with our surroundings. If a person is put to a situation of fear for some time,



**Figure 2.** Adaptive point, adaptive range on an emotional scale.



**Figure 3.** We feel a particular emotion only when the stylus of stimulus for that emotion moves beyond the adaptive range, or certain event or situation incites emotional response beyond the adaptive range, either towards the positive end or towards the negative end

he would feel it and would physically and psychologically express 'fear' reactions. But after a considerable time if the situation still persists continuously, the mind and body of the person will gradually become adapted to that situation. That means, he would no longer feel any sensation of fear, neither he would express any fear reaction through his physique or through his psyche.

Here the adaptive point and range for his 'fear' emotion has been moved towards the negative end on the scale (Figure 4).

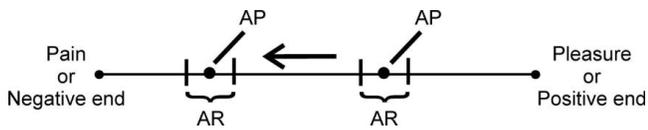
### Positive and Negative Adaptation

When the AR moves from the negative side towards the positive side to be adapted, it is called positive adaptation, and when the AR moves in opposite direction to be adapted, it is termed as negative adaptation. The time for adaptation to be completed varies. It depends on the distance from the evoking stimulus to the adaptive point. The more the distance the more the time is needed for the process of adaptation to have been completed. Usually it is completed within one week if the stimulus remains constantly in its position either in reality or as a memory (that is when the event has happened, and the effect of it working as a memory). But in case of imaginary case, partial adaptation takes place, not complete. In imaginary case, to what extent adaptation will occur that depends on the magnitude of the emotional response and chance of recurrences of the event or the situation in the future.

### Emotional Catharsis

Another important feature of emotion is, though in any particular time when we are more or less adapted to all the emotions within their adaptive ranges, yet we sometimes want to exercise any particular or different emotions, moving the stylus of stimulus a bit towards the positive or negative end from the adaptive range. It is like stretching our legs after sitting for a long time. This is known as emotional catharsis. The term was first coined by Greek philosopher Aristotle [In Greek catharsis means purification or cleansing]. For that we go to enjoy movie to experience those emotions that we have not exercised for a long time. These exercises are needed for other faculties of our mind, and body also to keep them on active state.

Now keeping in mind all four above mentioned characteristics



**Figure 4.** Adaptive point and range has been moved towards the negative end on an emotional scale.

of emotions, some common conclusions can be drawn.

1. In a happy mind, adaptive ranges for the most of the emotions lie towards the positive or pleasure end on the scale.
2. In an unhappy mind, adaptive ranges for most of the emotions lie towards the negative or pain end on the scale. But though in unhappy mind, ARs of most of the emotions lie towards the negative end on the scale, yet they create a pressure always on the psyche of the person for the placement of them towards the positive side.

These pressures being aggregated, produce a great directional drive that intensely involves our means, that is our other houses (memory, intelligence, etc.). From this pressure or drive, great creations may come.

- (3) Grossly thinking, our life is actually a struggle with the environment in an effort to push our ARs towards the positive end on their scales, as “No organism upon this earth live to become the fittest, their only goal is to serve their emotions, survival of fittest is an outcome of it.”

But in some cases, the displacements of adaptive ranges of one or more emotions take place to such a negative extent, that the subjects themselves are unable to tackle, may result in their sufferings from various psychoneurotic disorders. Most of the neurotic disorders are caused by the frequent threat of serious negative displacement of ARs on different emotion scales. When there occur marked negative displacement of ARs on a number of emotions, emotional bluntness may follow. Professional’s help to grow the subjects’ own insight into their problems and suggest the probable ways to come out of those situations may become necessary for them.

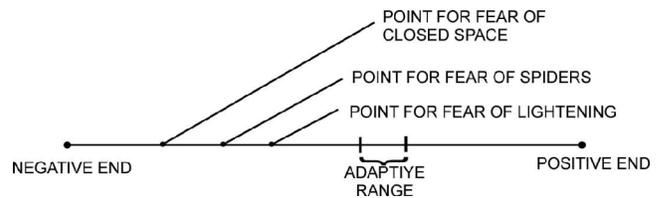
Now let us go to deeper into the matter.

For a particular emotion, the adaptive range lies in a particular position on the scale. Different stimuli evoke responses at different points on the scale. For example, I would take ‘fear’ as a standard emotional example. The ‘fear’ is the negative side of the emotion. The opposite side is ‘courage’ or ‘confidence’.

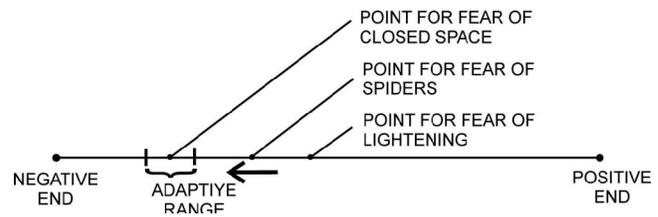
Now a subject has fear of closed space, fear of lightening, and fear of spiders. Among them, the subject’s worst fear is the fear of closed space (claustrophobia).

So, these three fears would evoke responses at three different points on the scale. All of the points are lying away from the AR towards the negative side on the scale. And point for the fear for closed space is lying the furthest towards that end (Figure 5).

Now if the adaptation process is undergone for the fear of closed space, that means if the person is gradually compelled to live constantly in closed spaces, his mind will be adapted and he will be able to live in closed space (in this case, we are assuming that he did not win over the fear). And his AR will be shifted



**Figure 5.** Point for the fear of closed space is lying the furthest towards the negative end on ‘fear’ emotion scale.



**Figure 6.** AR will be shifted towards the negative end and cover the point where the stimulus for closed space was producing fear.

towards the negative end and cover the point where the stimulus for closed space was producing fear. But at the same time, as the adaptive range has shifted beyond the point for stimulus of other objects of fear e.g. fear of lightening and fear of spiders, the subject will also cease to fear those objects (Figure 6).

That means if the subject becomes adapted to co-exist with the object of his worst fear (without winning it - winning means formation of new association of memories and making the stimulus to evoke response up towards the positive side - discussed later), he will lose fear for other objects also. Or in other words, more the displacement of AR would occur towards the negative side, the more number of objects would lose their recognition as being the objects of fear to a person. Or a person who reaches the tolerance of extreme fear, no objects, previously known to be objects of fear, would seem to him fearsome any more.

Not only that, as the emotional responses provoked by the spiders and lightening are lying on the positive side of AR, the person in that adapted condition even may like the sight of them. We all have experienced in a disastrous or worst situation, the sight of our bitter neighbour even brings pleasurable sensation in our mind.

## STIMULUS FOR EMOTION

‘Memory’ and ‘Intelligence’ both these houses of mind can act for arousal of emotions (at this stage we are not sure whether the house of physical activity or motor areas can also be responsible for arousal of emotions). Simple associated memories are mostly responsible for arousal of emotions in man and animals. These associated memories could be regarding an object (living or non-living), or a situation. The associated memories bring the recollection of previous painful or pleasurable experience, either physical (that is perceptual or receptor mediated sensation), or emotional (that is past favourable or unfavourable emotional experience or emotional memories). For example, seeing a fearful object we get terrified, seeing a delicious food we get hungry, seeing the beloved one we get romantic sensations. In some cases, emotions occur instantly, but that is reflex retrieval of memories, without much awaring the consciousness. Sometimes we get sad

hearing some sad music, feel romantic hearing some romantic music; or a particular odour may cause arousal of sexual desire. Here, the things have been conditioned with those emotions. Or in other words, these sad or romantic music, or particular odour are part of associated memories of some situations which were responsible for arousal of those emotions in the past.

Besides memory, our house of intelligence can also evoke emotional arousal. 'Thinking' or 'Cognitive appraisal' can educe emotions both in direct and indirect way. In direct way, 'cognition' itself educes the emotion directly. Like someone was deceived and 'thinking of that' will produce anger reaction within him. Here, 'thinking' is not related to any past pleasurable or unpleasurable experience. But 'thinking' makes the decision that the event needs the arousal of a particular emotion which is essential to promote or check the favourable and unfavourable experiences in future. But the pattern of direct cognition induced emotional arousal is almost invariable in a particular individual. It is probably an erroneous conception, that by trying to change the pattern of thinking, an individual will be able to alter or check the direct cognition induced emotional arousal. Because 'cognitive appraisal' of direct cognition induced emotional arousal is also dependent on knowledge or previous memories, some of which may have been associated with either pleasurable or unpleasurable sensations (physical or emotional). So if we think deeply, direct cognition induced emotional arousal is also modulated upon past or associated memories like the indirect mode; or in other words it is just a complex variety of the indirect mode of cognition induced emotional arousal.

In indirect mode, 'thinking' helps to reach the final consequence of an event or incoming series of sequences, which ultimately brings about the recollection of the associated memories attached with the final consequence. And that finally evokes the emotional response. Sometimes our mind conceptualizes the possible experience. For example, we will get terrified seeing a tiger or lion, though we may not have any past experience of being attacked by them. Here our 'cognition' leads us to the final consequence of injuries that we have to suffer, and of death. The mind conceptualizes what will be the incoming painful experience of injuries, by the multiplication of past experience of suffering from simple injuries. One thing has to be asserted here that 'thinking of death' does not produce 'fear' within us in indirect way. Because we do not have the past experience of dying. 'Cognitive appraisal of inevitable death' may produce 'fear' reaction in direct way, but it better produces 'sadness' rather than 'fear'. 'Fear' is for 'flight mechanism'. Where there is no question of 'flight', our 'cognition' does not evoke 'fear' emotion. But most significantly, 'thinking of death' causes sheer depression by course of negative thinking. So simultaneously we will feel 'fear' and abject 'depression', one coming from the conceptualized possible injury and another coming from ultimate negative thinking.

**Hunger and Sex:** Hunger and Sex are two basic passions. They both have the features of a perception and an emotion. We perceive or feel hungry by internal stimuli aroused by the receptors in hypothalamus which detect fall in glucose and other nutrients (amino acids, fatty acids, keto acids etc.) level in blood. Again, we feel hungry by thinking of food. We get sexual stimulation from different parts of the body through receptor mediated neural

arousal. Local stimulation, massaging of glans penis in male and glans clitoris in female stimulate sensory nerve end organs, and the sexual sensation is passed through the pudendal nerve and sacral plexus to the cerebrum. And also we get sexually stimulated by thinking of sexually provoking thoughts. So these two basic passions carry the features of both receptor mediated perception (like vision, audition), and emotion. Though we are not sure at this stage whether 'emotions' are also not aroused by the receptors located in the emotional centers (limbic system). And it is also difficult to say whether the perceptual center and emotional center for both these two basic passions are the same or different anatomically and physiologically.

## ACTION OF EMOTION

Emotions act in two ways, one is felt emotions and another is unfelt emotions. Our felt emotional sensations stimulate, guide and provide directional drive for the activities of all other three faculties of mind - memory, intelligence, and physical activities - as well as have many effects on the body's physiological processes; as 'hunger' increases salivary secretion, 'fear' increases heart rate. Towards which goal, a particular emotion guides the activities of the mind and physique, that has been described in the beginning of this study.

Our unfelt emotions determine the positions of the ARs on the emotional scales. Though we are unaware of these emotional responses, the positional situation of the ARs produce a psychic pressure or tension. This tension is always from negative to positive ends. That means more the AR will be situated towards the negative end on the scale, the more will be the psychic tension for shifting it towards the positive end. This tension consciously or subconsciously guides our all mental faculties (memory, intelligence, physical activities) also. When the ARs are situated towards the positive end, this pressure will be minimum, making the subject feel a sense of happiness.

## EMOTION AND PERCEPTION

Though perception is a receptor mediated sensation that brings information from our external and internal world to the houses of our mind (four houses of memory, intelligence, emotion and physical activities) for being memorized, intellectualized, emotionalized or actionized, it follows some of the features of emotions also, though not all. So in one sense they are mechanisms for input of data, and in another sense they are feelings. In case of feelings, they also maintain adaptive point and range.

As we close our eyes in strong light, show reactions to loud sounds, move our limbs from excessive pressure, either crude or fine. But we do not close our eyes to normally accustomed light, even we do not hear consciously all the sounds within adaptive range. We do not feel the normal barometric pressure. The adaptive ranges have also been settled in these cases. If we are put to a noisy surroundings, then simultaneously the AR for perception of sound would be displaced. So happens with other perceptions.

But the difference is that, that here does not develop the psychic pressure for the displacement of the ARs. We are accustomed to live in normal barometric pressure. And we do not feel any urge to

move to any area where this pressure is less or high.

It is like perceptions are just for adaptations, it has no motivational component; whereas emotions are for adaptations as well as for progress and evolution, through directing the species on serving specific goals.

## CONSCIENCE

In 1923, Sigmund Freud, in his book 'The ego and the Id', divided the mental apparatus into three dynamic parts : The Id, the Ego, and the Superego.

The Id is the original instinct of our mind.

Superego is our conscience, which is concerned with our moral standards, and develops on the basis of rewards and punishment, through parental and social influences.

And Ego maintains a balance between the Id and the Superego.

According to Freud, the superego is formed between 5-12 years of age. According to some of the later psychoanalysts like Melanie Klein, this superego develops during the first and second years of a person's life. Actually the superego or conscience starts to develop from birth or before birth. And its formation is not fixed or completed at any stage of life. It can be modified or changed at any stage of life as long as the person lives.

Not only that, displacement of the person from a certain environment to another environment with different ethical values, cultural beliefs can gradually change his conscience or superego to different extent. But the previous imprint, his knowledge and maturity count and act in favour or disfavour of the change.

But first of all we should define what actually 'the conscience' is.

Conscience is nothing but the aggregated adaptive ranges of the emotions, acting together subconsciously or consciously to modify one's thoughts and behaviour. The emotion 'Fear' plays a significant role in this case.

In this regard, I cannot check myself from quoting Friedrich Nietzsche - "Conscience is internalization of man's instincts which do not find their external expression". Nietzsche is right.

For example, to a man 'stealing' is a sin or bite to his conscience. But what would happen to him if he steals? There is chance of being detected, legal punishment, bad police records, rejection from future jobs, social rejection, displacement from the normal civilian life.

Unless he already has undergone this before, the thinking of all these prospects will make a significant emotional response on the scale of the emotion 'fear' towards the negative or pain end, and will produce fear within his mind. This fear checks him from the action of stealing. So the adaptive range of fear which remains unconscious or better subconscious and disfavours negative displacement and promotes positive displacement of it, actually makes the conscience.

Had the stimulus remained within the adaptive range on the scale, he would not have to suffer from the bite of conscience. If he is a convicted thief, he has already suffered these before and

there has been displacement of the AR already. In this case his conscience would not prevent him from stealing if he needs to take that action again. Here the unpleasant experience of the previous punishment will only act on his mind to produce fear reaction, if it is really fearsome, but others mentioned above would not. But as over a long period of time, many of unneutralized emotional experiences tend to fade off with the change of environment or if there is no repeated recurrences of the situations that arouse his memories either upon facing, or on imagining of them; and this can be done by active effort also, - the correction of the conscience of a thief may be possible to some extent (but not to full extent) with complete change of environment.

So 'Rewards and Punishment' theory is partially true, because the person who is already adapted to the punishment, to him fear of punishment would play less role on conscience. In case of rewards, the conscience favours the displacement of AR towards the positive end. When the AR is already settled on the scale in near proximity of the positive end, there is little place for further displacement of AR towards the positive extremity. That is, to a man, who has been already rewarded a lot, further any reward would produce less effect on his conscience.

So, the effect or urge of conscience for doing something (with regard to a particular emotion)  $\propto$  (proportional to) the distance of the stimulating point of the associated memories, from the adaptive point towards the positive end on the emotion scale.

And, the effect of conscience for not doing something (with regard to a particular emotion)  $\propto$  the distance of the stimulation point of the associated memories, from the adaptive point towards the negative end on the emotion scale.

Together, the effect of conscience (for doing or not doing something)  $C = E \times \text{Distance of the stimulation point from the adaptive point}$ .

(If this distance is towards the positive end from the adaptive point, it would be positive and if towards the negative end, it would be negative).

So, the total effect of conscience (on a particular perspective)  $C_T = \text{Average of sum or aggregation of all the effects of the associated memories (about that perspective) on different emotional scales, that is } = [C_1 + C_2 + C_3 + \dots + C_n] / n = \sum_{r=1 \text{ to } n} C_r / n$ .

Here 'E' is a constant, which defines emotional co-efficient, which measures quotient of expansion of the person's emotionality with respect to others or normalized standard population of same age. The emotionality or emotional co-efficient may vary for different emotions (such as  $E_aQ$  for anger,  $E_lQ$  for love etc.), but there is also a common emotionality or emotional co-efficient (EQ) which is based on common neuronal efficiency. In calculation, for better result individual emotional co-efficient should be taken for respective emotions, if possible. Otherwise, common emotional co-efficient can also be taken which will produce a fair result.

Now let us go to another discussion. Our mind holds different beliefs, ideas, faiths including thinking and behavioural patterns in a particular shape, developed on this conscience.

Whenever there is significant change of position of ARs, this

shape also needs to be restructured by necessary alterations. This includes changing of these ideas, beliefs, faiths, behavioural and thinking patterns also.

We call it 'defence mechanism'. Defence mechanisms usually take logical route to make this necessary changes and be adapted with newer situations. But sometimes it may not be able to do that. In those extreme situations, to cope with the shifted ARs, our structural model of faiths, beliefs etc. even become obliged to take ideas, beliefs that may not follow the logical routes.

This is one of the mechanisms behind the formation of delusions. But not the only mechanism. Delusion may also form when the mind's logical thinking ability is impaired (as in schizophrenia). Again, the criteria for delusion are also questionable. How many of our faiths, beliefs are logically or experimentally justified? So we call our beliefs if normal or delusional according to the fact that whether they are going with the cultural norm or not, irrespective of the fact that whether they are rational or irrational. Same belief of one culture may be regarded as delusion in another culture.

## EMOTION AND PERSONALITY

Before starting this discussion, we will talk about a little about emotional memories.

Along with our perceptual memories (memories - data of which are received through our sense organs), our emotional experiences, intellectual processes, and motor skills are also stored in our memory as memorigraphic data. The emotions we are feeling in our everyday life, intellectual or logical processes that we are conducting in our house of intelligence, and the motor skills - all are being stored in the respective areas of the brain. When we walk, drive or do cycling, we don't have to consciously remember how to walk, to drive or do cycling, as the motor activities for those actions have been stored in our memory as memorigraphic data (this is called procedural memory). When we do mathematics, the process by which we are solving the problem through the house of intelligence is being stored in frontal association area as memorigraphic data. Same way our emotional experiences that we are encountering in our everyday life are being stored in limbic association area as memorigraphic data. Though emotions help in the hippocampus mediated embedding of all types of memories but significant emotional experiences (not all, as like we do not keep in memory all the things that we are seeing every moment) are themselves are stored as emotional data. So activities of all the faculties of mind can be stored as short or long term memories in the respective areas of the brain after being converted into memorigraphic data.

But here there is significant difference between emotional memories and all other types of memories. Emotional memories are those memories which record our emotional responses. Suppose one got horrified watching a deadly scene. Here the visual image through the sense organ of vision, i.e. eye, will be stored in secondary visual cortex - and it is a perceptual memory. But the emotion 'fear' attached with it will be stored separately as memory in limbic cortex - and it is an emotional memory. Both these memories will be associated in large parieto-occipito-temporal association area. So when one will recall the event later

imaginatively, both the memories will occur to him. One will give him the perception of vision of that incident and another will evoke the emotion 'fear' within him. So at the same time, along with the imagining the incidence, the subject will shudder in 'fear'.

Now what's the difference between these two types of memories?

On repeated recollections of the memory, the perceptual memory becomes stronger, but the emotional memory becomes weaker. The reason of this is at each recollection the subject expresses out some of the emotion. So in subsequent recollection, a person feels lesser degree of emotion than the previous one. And after a number of time of recollections, the emotional memory virtually dies out. So after a time, when the subject will remember that incident, only the visual or perceptual memory will recur to him, but the attached emotional memory will fail to evoke any emotional response to him, making that incident emotionally neutral. Though the subject will remember it was a fearful incident as an informational memory, but would not feel 'fear' by recollecting it. This process of fading off or dying out on repeated recollections (not recurrences) only happens with the emotional memories, where all other types of memories - perceptual memories, intellectual memories, motor memories follow the opposite rule.

But what if repeated recollections are not done? - Perceptual and all other types of memories fade away over time. Emotional memories also can die out over time, but reason for that is different. Emotional memories die out over time because of unconscious expressing out of them through our subconscious mind without the awareness of us. Whenever we relax mentally, many of our emotional memories, at least partially, based upon the judgement or discretion of our subconscious mind, get expressed out through the expression of our eyes as well as our bodily expressions. This is the basis of dying out of emotional memories over a long period of time.

Now as already stated, the serious displacement of AR towards the negative side on any emotional scale creates a great psychic tension of unhappiness or dissatisfaction in a subject's mind. So, even if the subject may have to co-exist with the objects or situations, his mind would always search for the routes for winning over them, because only in that position his AR may come back to the more desirable position.

In case of fear, it is not an easy job, if the object or situation is truly something to be feared. But it is an achievable goal when the object is truly not something to be feared. That is in case of phobia, where the fear is irrational.

But here we first explain elaborately what winning means. Winning means change of associated memories which have some past painful or unfavourable experiences either 'physical' or 'emotional', regarding an object, or a situation, or a final consequence of a cognitive appraisal. Whenever we see or think of an object, all the associated memories attached with it instantly come to our mind reflexively. These memories can be good or pleasurable, or bad or unpleasurable. If some of these memories bear threatening experiences of the past, the whole associated memory about that object will evoke response on the negative side

of the 'fear' scale, that means it will incite 'fear' reaction within us. Suppose someone was beaten by some person. So whenever he will see that person, the associated memories about him will instigate stimulation on the negative side of the 'fear' scale. But if the associated memories are changed - for example, he retaliated it properly by giving due punishment to him, either by beating him in return or putting him in cell so that it would be hard for him to beat him again - then the associated memories will fail to elude 'fear' response or stimulate on the negative side of the scale. This change of associated memories about that object means winning over the 'fear' reaction evoked by that particular object. Phobia is irrational fear. Here the object may have not harmed directly the suffering person in the past. But some of the memories which are associated with it bear threatening or unpleasurable experiences suffered in the past. So the whole association of memories regarding that object evoke negative response on the emotion 'fear' or emotion 'disgust' scale. So we may be disgusted to see a spider or cockroach as because there are so many disgusted memories associated with them - such as seen in dirty places, seen frequently spoiling foods; even having seen others to be terrified by them, etc.

Besides change of organization of associated memories, so that it aggregatedly fails to evoke an emotional response, another way of winning is expressing out of the specific emotional memory or memories attached within the associated memory.

Suppose someone got out in the morning and faced four 'fear' or 'anger' provoking incidents that evoked emotional responses which he did not neutralize on the spot with appropriate actions. So these experiences will be stored as emotional memories in his mind. By the end of the day when he or she will become isolated at home or got away from the incidences, mind will work upon those. Whenever he will think upon those emotional memories, those would produce anger reaction within him. On thinking of those there will be a threat of shifting of AR on emotion scale towards negative side. Now which incidence his mind will take first? If it had been worked out serially, our brain would have been evolutionally backwards. The mind takes them according to their importance, severity and possibilities of facing them again in near future. That means which fear or anger provoking incidence has more severity or has more importance to be neutralized, or which incidence has the possibility of recurring in imminent future (for example, he will have to meet one of those events again in the next morning). The incidence which has the least chance of recurrence or there is no possibility of recurrence of it, the mind can set it aside. But how would he neutralize its emotional effect? The mind does try to neutralize the negative effects of the emotion or prevent replacement of AR from its existing state by expressing the emotion through physique and psyche, or acting out through behaviour, like someone acted out his anger on the spouse or family members. But the fact is actually others are sharing willingly or unwillingly the negative effect of the emotion on themselves. Whatever it is if he does not neutralise the effect, displacement of AR may take place partly depending on frequencies of retrieval of the incidence and the probability of recurrences of it. In imaginary cases complete adaptation does not occur as the subject is not constantly staying with the object or situation, and he may gradually win over it over a period of time if recurrence does not happen, by completely expressing out of the emotional memory. All these processes occur

in our conscious mind as well as in our subconscious mind. But selection of serial of events is conducted automatically mainly by our subconscious mind, switching from one to another, working partially on one, and then shifting to another and then coming back again to the previous one.

Now our mind can consciously put away recollection of any emotion provoked incidence, but it is not neutralizing its emotional memories. So the mind will remain subjugated to that incidence to some extent. Subjugation may occur in both cases of complete adaptation and partial adaptation. Complete adaptation occurs when the person is constantly staying with the object or situation. Incomplete adaptation occurs when the person is not constantly staying with the object or situation. Here occasional real incidence and imaginary thinking of the incidences cause incomplete adaptation or partial shifting of AR, depending on the frequencies of incidences and imaginary thinking. Whatever emotional experiences either our conscious or subconscious mind is setting away, will be stored as unneutralized emotional experiences or memories. If that incidence accidentally reoccurs again, the mind will feel the emotional response. Not only in the defence mechanism of displacement, even a person with positive pattern of thinking can put aside the negative emotion provoking events to get relief from the distress through positive understanding but he cannot deny the subjugation. So the difference between a person with positive pattern of thinking and a person with negative pattern of thinking is that the positive person would have subjugation only, where the negative person would have subjugation and depression both.

When the mind is forced to coexist with the emotion provoking agent without neutralizing it, complete adaptation occurs. Here the displacement of AR takes place to cover the point of stimulus. In that situation, the person can no longer feel any emotional reaction triggered by that object. But the mind becomes completely subjugated to that object.

Though subjugation reduces the quality of life, but once completely subjugated it does not bring to the person any mental distress; if it is not too severe, in which case he will feel extreme sense of unhappiness. But what effect it implicates on the mind is change in personality. Why do we have different personalities? Different shape or model of our minds? It is not just associated and embedded memories of information, but the unneutralized emotional experiences which are also recorded in memorigraphic data as emotional memories. But here along with 'subjugation' positive emotional experiences also share their part. That means some memories which bring happy or pleasurable emotional responses also take part in this process. We can call it 'upjugation'. In every points of life all these emotional memories are acting on our emotional scales, evoking emotional responses, ultimately consolidating into resultant behaviour - making us different persons with different individuality.

It is very interesting to follow that not our neutralized emotional experiences but our unneutralized emotional experiences either positive or negative actually make us, by making our personalities. To these unneutralized emotions, the person may be partially or completely subjugated or upjugated depending upon the degree of adaptation. Partial subjugation or upjugation occurs in case of

incomplete adaptation, and complete subjugation or upjagation occurs in case of complete adaptation. When the subject is forced to live with the emotion provoking substance or situation, complete adaptation takes place, in imaginary cases incomplete adaptation occurs based upon the chances of recurrences of them. In case of complete adaptation, though the person cannot feel the emotional reaction regarding the object or situation, behaviour as well as personality becomes changed also in that case, only making our mind unaware of silent emotional reactions. So our personality as well as behaviour are modulated upon both incomplete and complete adaptation to our unneutralized emotional memories.

It should be furthermore noted that, through the change in our thinking pattern we can combat depression, but we cannot change our overall personality if we do not neutralize those unneutralized emotional memories. But changes in pattern of thinking indirectly may induce a person to neutralize some unneutralized emotional memories which are responsible for his or her distressing personality and maladaptive behaviour. But it cannot do it directly.

A person's gross personality changing is difficult, but not impossible. Because one's personality is principally determined by the thousands of unneutralized emotional experiences or memories that has been stored in his memory. Alteration or neutralization of all of these is difficult, yet possible in that sense, that unneutralized emotional experiences or emotional memories tend to be faded off over long period of time, if repeated recurrence of the event does not happen. The reason for this 'fading off' is that these emotional memories are gradually expressed out over time by imaginatively repeated recollection of them either in the conscious mind, or without the awareness of the subject in the subconscious mind. Whenever a person feels relaxed some of his unneutralized emotions get expressed out through his eyes and bodily expressions without the awareness of him. This process makes ultimately many events emotionally neutral memory. But this takes considerable period of time. And it may count for the fact that if some person is completely shifted from one environment or surroundings to another environment or surroundings, being completely detached from the first one, for a significant length of the time, his behaviour and personality is bound to change and be remodified according to the later one.

But very few of individuals have that scope and also willingness. So in practical life, to combat maladaptive personality, it is advisable to express out or acting out some of specific emotional experiences which are mainly responsible for the person's distressing behaviour or maladaptation, and restrict the recurrence of similar emotional experiences. But in this case a few responsible emotional experiences have to be there. If the experiences are large in number and diffused over a considerable period of one's life, like prolonged ill treatment or abuse throughout the childhood, the personality is less amenable to correction, but not impossible altogether if the complete change of environment is induced for a prolonged period of time.

## **EXPRESSION AND RECOGNITION OF EMOTION**

How do we express our emotions? To say it straightforward, the expression of emotions can involve any of the entire bodily processes, and it also includes behavioural expression as well

as attitude of the body or body language. In case of animals, the expression may be comported by any of the parts of the body. For example, wagging of tail denotes 'joy' in dog, whereas drooping of it indicates 'sadness'. Activation and constriction of jaw muscles showing canine teeth signifies 'anger', and by this carnivorous animals display their anger on their opponents.

But in case of human, the muscles of the face have been developed to perform with maximum precision to express finer emotions, particularly those which are not frequently possessed by the animals, like shame or embarrassment, surprise, humour, etc. Besides facial muscles, the muscles of the uveal tract and eyelids are another important conveyors of expressing emotions in man. The dilatation of pupil is recorded in a number of emotions in different magnitude; i.e., fear, surprise, anger. Widening of the palpebral aperture (opening between eyelids) is observed in 'fear', 'anger', 'surprise'; whereas the aperture gets narrowed in emotions like 'shame or embarrassment'.

'Voice' takes a major part in expressing emotions. Growling and barking sounds are specific for 'anger' in case of animals. In human being, in which voice has been excelled to finer level of instrumentation, almost all emotions can be recognized by the tone and intensity (i.e., frequency and amplitude) of the voice of the emotional expresser.

Other modalities which are involved in expression of emotions are responses mediated by the autonomic nervous system, either sympathetic or parasympathetic. Changes in the colour of the skin through peripheral vasodilatation or vasoconstriction; erection of body hairs; increased sweating; changes in body temperature, heart rate, breathing rate and depth; various gastro-intestinal signs and symptoms; changes in tone of autonomic musculature (i.e., involuntary micturition in 'fear'); are associated with physiological expression of the different emotions.

So the expression of emotions is a multimodal system which involves variably different systems of the body. However, the recognition of emotions by others, varies in degrees in both animals and man. Here I must admit, recognition of emotions is cross-species. That means a man can understand or perceive an animal's emotion, and an animal can recognize a man's emotion. But it is very interesting, that this cross-species nature of emotional recognition is only bounded to common emotions. That is, an animal can recognize those emotions of a man, which they themselves possess; like 'anger', 'fear' or 'love'. But they are completely blind to those emotions which they themselves do not possess. An animal is unable to perceive a human emotion like 'humour' or 'laugh'. So it is very necessary for the recognition of emotions between the organisms that they must have possessed common emotional centers in their brain or nervous system. It also guides to the fact that the same emotional center which is responsible for expression of the emotion, is also responsible for perceiving the emotion in some way.

Again in case of man, recognition of emotions is not uniform in magnitude in all individuals. It depends on age, maturity, knowledge, and intellectual and emotional level (depending on IQ and EQ) of an individual. And this is an important factor in social referencing. A child first learns to read emotions majorily from its

parents. As the development proceeds, the maturity in emotional recognition also ensues. The recognizing ability is seriously declined in certain psychological disorders like schizophrenia (particularly in carriers of val/val allelic variant of COMT gene), autism spectrum disorder (ASD), alcohol and substance use disorders; as well as in several organic mental disorders like Alzheimer's dis., vascular dementia, frontotemporal dementia (FTD), and Parkinson's disease (Tsuchimine S et al., 2013; Carra G et al., 2017; Berggren S et al., 2016; Castellano F et al., 2015; Torres B et al., 2015; Shimokawa A et al., 2003; Madeleine S Goodkind et al., 2015; Chia-Yao Lin et al., 2016).

## SUBJUGATION AND DEPRESSION

These are two completely different entities, from which a patient or any person with non-organic psychology (that is without any pathological base) can suffer. Here we are keeping out of discussion the disorders like schizophrenia, alzheimer's; or some mood disorders; where there is defect lying in the structural, neurochemical or other mechanisms of activities in brain - either acquired or hereditary. They are diseased processes.

Subjugation occurs when the adaptive ranges on one or more emotion scales shift towards negative extremity. It may happen on 'fear' scale (which is most common), or on any other emotion scale like 'utsaha', 'joy', anger, love, etc. A person may become subjugated by some fear imposed upon him from some quarter. Again, a person wanted to do something satisfactorily, but it did not become completed according to his will. Here his subjugation occurred on his 'utsaha (= enthusiasm, zeal or zest)' scale. A person wanted to build his house nicely. But it did not get finished up according to his expectation. The painter did not do the right colour of his choice, builder did not make some part to go with his vision. So he became frustrated. His mind felt unwell and some kind of bad, that he cannot explain. What is the actual state of his mind? It is certainly not depression. It is subjugation - Subjugation on the scale of 'utsaha' or 'enthusiasm'. So his mind will not feel good and he may be unable to describe or clarify the actual condition of his mind and may need help for that. Subjugation may occur in any emotion scale and it occurs due to negative adaptation of the AR, whereas upjugation occurs due to positive adaptation of AR. A professional's job is to give the patient a clear insight, so that the patient himself can understand on what emotion scale the subjugation is occurring.

On the opposite hand, depression occurs as there is wrong thinking pattern in mind. Positive thinking causes mood elevation or elation and negative thinking causes mood degradation or depression. In depressive state activities of all the faculties of mind - 'Intelligence', 'Memory', 'Emotion' and 'Physical Activities' are diminished.

Difference between sadness and depression : Sadness occurs in every person at different points in the life. Alternatively, we apply the term 'melancholy' to it. But it should be differentiated from depression. In sadness, the person feels unpleasurable feelings towards life and environment. It is the opposite end of the same emotion 'joy'. 'Joy' brings the information that the environment and surroundings are favourable to life. So it incites us to take maximum activities, that would favour our future existence. Once

the environment changes for good things, the sadness gradually disappears.

But in depression there is severe loss of mental power. It is not a part of emotions.

Yet we fail to distinguish sadness from depression, because in many cases, depression and sadness remain associated together. And in sadness negative thinking may occur, that leads to depression. But both can appear in pure form. Some times, we feel sad. The environment around us seems to us bleak, gloomy and melancholic, though there is no reason for negative thinking. It is pure sadness. On the other hand pure depression without sadness may occur. Even in a festive, good-weathered, enjoyable surroundings or environment, the negative-thinker will suffer from depression, if he continues to think negatively.

'Sadness' is a feeling, it is a part of the emotions. 'Depression' is loss of mental power. It is the negative extremity of 'mood'. In non-pathological state, "positive thinking causes mood elevation or elation and negative thinking causes mood degradation or depression". Other things associated with mood elevation or depression are drugs, different chemical substances, alcohol, melatonin, etc.

Sadness occurs even in a person with all positive attitudes. Depression occurs predominantly in a person with negative attitudes, at least for that time ongoing. The persons who have positive attitude in life, just let their sadness pass by. That is the best strategy for tackling sadness - Give some time to it. Any other joyful event will push the stimulus of emotion towards the positive side and will alleviate sadness. On the other hand, depression occurs in a person, who has negative attitude in life. It cannot be let pass by, if he does not stop negative thinking. And it may progress to severe condition when the treatment ultimately becomes necessary.

Treatment, strategy, and approach to the patients suffering from these two different entities are completely different. It includes psychotherapy as well as the drug treatment. But the psychotherapeutic approach for treating the patients suffering from these two entities are not the same.

Of these two entities, which one is more grave or serious? Definitely the latter. A person can survive in a subjugated state and carry on normal routine works very comfortably and fairly. Domestic animals and animals in captivity all are subjugated, predominantly on 'fear' and 'hunger' scale. But they carry on all the life's basic daily works. In yesteryears, slaves, war prisoners used to live in subjugated state. When an intelligent, creative mind remains subjugated for long time, there is a chance of revolt. The great revolutions and rebellions occurred in this way in our history.

To say the truth, all we people in this world are subjugated to different extent to different quarters. A man working in his workplace has to be subjugated to higher authorities. But the level of subjugations varies. However, the fact is that the subjugated person may, or may not need the treatment. It depends on the level of subjugations and the acceptability of the person concerned.

Coming over the other entity, the treatment of wrong thinking pattern is rather difficult. It involves his beliefs, faith, culture, family education and many things. It is not easy to set right

**Table 1.**  
Difference between Subjugation and Depression

Subjugation	Depression
1. This occurs due to subjugation on one or more emotion scales.	1. This occurs owing to wrong thinking pattern. Positive and negative thinking result in elation and depression respectively.
2. The subjugated person may, or may not need psychological help or treatment.	2. The depressed person often seeks for other's help or professional's help and may need treatment.
3. Though the person may not feel quite satisfied or happy, yet it is not that grave form of mental disorder like depression.	3. If it continues, it may progress to severe form when the person becomes unable to carry out his normal work and the condition eventually may culminate into the individual's committing suicide or being succumbed to alcohol, drugs and other forms of self-abuse.
4. Even in fairly subjugated state the individual can carry out all the routine daily life work.	4. As the depression deepens, it accordingly hampers the individual's ability to do normal daily works. In severe state the person becomes motionless, even forgetting and neglecting eating and other essential works.
5. No drug treatment is advised for the treatment for subjugation. Dopamine re-uptake inhibitors (DRIs), dextroamphetamine may be tried in case of severe uncomfortable subjugation. But they have serious abuse potentials. Sertraline (SDRI, a serotonin-dopamine reuptake inhibitor), having both the properties of blocking serotonin and dopamine transport, can be used in cases where subjugation and depression are co-existing, like melancholic depression or seductive depression. Pramipexole, a dopamine receptor agonist, combined with antidepressant medication, can also help for this purpose. Sedatives and anxiolytics like benzodiazepines may be helpful to combat with the acute stage of adaptation. But the psychotherapy has a definite role to give the patient clear insight and help with other relevant advice.	5. Fortunately, there is drug treatment for the patients to relieve them from the effects of depression. A number of good antidepressant drugs have been developed during the past few decades. And in severe cases ECT can do good, though there are side effects of amnesia. But psychotherapy is the definitive treatment.

everything by the psychologist or psychiatrist on a single sitting. Currently drug treatment and ECT are in vogue with fair success. But that is for a definite period of time or as long as the person is on the treatment. ECT has its side effects of amnesia also. Cognitive therapy is also well successful.

**Treatment Protocol for the Two Entities:**

No drug treatment is advised or legally authorized to treat for the subjugated state. Dopamine re-uptake inhibitors (DRIs) can help in severe subjugation, but they have serious abuse potentials. Many psychoactive substances like cocaine, phencyclidine (PCP), amphetamines act by similar dopaminergic actions. Psychotherapy is the best approach.

Fortunately, there are a lot of drugs as well as Electroconvulsive therapy (ECT) for the treatment of depression. But yet psychotherapy is to be considered as the definitive therapy.

**Difference between Subjugation and Depression (Table 1):**

**CONCLUSION**

Here in this study, we have tried to define and analyze different aspects of emotions. This is theoretical approach based on observations, experiences, and relevant literature related to the subject. We have kept 'molecular, physiological, and anatomical' basis of emotions out of this article, which must be described under separate heading. This is purely psychological studies to explain emotions. Psychology based on theories and ideas, as well as observational and experimental support to hold those views. So more researches are needed to draw experimental conclusion and further support the theories elaborated in this article.

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