Master of Arts

(Psychology)

Advanced General Psychology 2

Semester-II

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Learning Outcomes

Unit I

- Define motivation and understand its role in behavior.
- Recognize the difference between motives, needs, drives, and incentives.
- Explain how motivational factors influence behavior and decision-making.
- Understand the concept of instinct as a biological determinant of behavior.
- Evaluate the strengths and weaknesses of instinct theory in explaining human behavior.

Unit II

- Define and differentiate between the expression and perception of emotions.
- Identify facial expressions, body language, and vocal cues associated with different emotions.
- Analyze how cultural and individual differences influence the expression and interpretation of emotions.
- Understand the physiological responses of the autonomic nervous system to emotional experiences.
- Identify key components of the fight-or-flight response and the rest-and-digest response.

Unit III

- Define and differentiate between the expression and perception of emotions.
- Identify facial expressions, body language, and vocal cues associated with different emotions.
- Analyze how cultural and individual differences influence the expression and interpretation of emotions.
- Understand the physiological responses of the autonomic nervous system to emotional experiences.
- Identify key components of the fight-or-flight response and the rest-and-digest response.

Unit IV

- Identify cognitive processes involved in each aspect of the thinking process.
- Apply problem-solving techniques and decision-making models to real-world scenarios.
- Identify characteristics of creative thinkers, such as flexibility, originality, and fluency.
- Analyze how individual and environmental factors contribute to creative thinking.

Unit V

- Describe the major stages of language development in children, including prelinguistic, babbling, one-word, and two-word stages.
- Identify milestones in language development, such as the emergence of telegraphic speech and the development of complex sentence structures.
- Explain how environmental factors, such as exposure to language and social interactions, contribute to language acquisition.

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UNIT I
MOTIVATION
Introduction, Motives, needs, drives and incentives, theoretical perspectives- instinct theory, humanistic, drive theories, incentive theories, opponent process theories, optimal level theories; Biological motives- hunger, thirst, sleep, sex; Stimulus motives sensory stimulation, exploration and manipulation, optimal arousal, social motives- measurement of social motives, affiliation, achievement, power, aggression, Frustration and conflicts of motives.

UNIT II
EMOTIONS AND STRESS
Introduction, Expression and Perception of Emotions. Emotions and ANS. Brain and Emotions. Theories of Emotions. Expressions of Emotions. Stress and Stressors. Coping styles.

UNIT III
PSYCHOLOGICAL TESTS
Introduction, Types of tests. Characteristics of a good test. Assessing Intelligence -Stanford Binet scale, Wechsler Tests.

UNIT IV
THINKING PROCESS
Introduction, Concepts, problem solving, decision making. Creative thinking -Nature and characteristics of Creative thinkers. Consciousness - Active and passive roles of consciousness, Sleep and Dreams, Meditation, Hypnosis

UNIT V
LANGUAGE
Introduction, Elements of language, understanding sentences and conversation; stages of language development; Acquiring of language.

UNIT I
MOTIVATION

STRUCTURE

1.1 Learning objective
1.2 Introduction
1.3 Motives, needs, drives and incentives
1.4 Theoretical perspectives
1.5 Biological motives
1.6 Stimulus motives sensory stimulation
1.7 Optimal arousal
1.8 Social motives
1.9 Chapter summary
1.10 Review questions
1.11 Multiple choice questions

1.1 LEARNING OBJECTIVE

After completing this unit, you will be able to:

- Define needs, drives and motives.
- Elucidate their characteristic features.
- Elucidate the theories of needs.
- Define drives and bring out the characteristic features.
- Elucidate the theories of drives and drive reduction theory.
- Define motives and bring out the characteristic features of motives.
- Delineate the theories of motivation.
- Explain stimulus motives.
- Describe the achievement motivation of and its various components.

1.2 INTRODUCTION

Abraham Lincoln, until past forty, was a failure in almost all activities he undertook. When asked about the change he said, 'My father taught me to work but did not teach me to love my work. I hit that accidentally, when I was past forty'. This 'love or will to do' (called motivation) depends on the strength of people's motives. Motives are the expressed needs and could be conscious or subconscious. They are always directed towards goals.

Motivating people to perform better and thus to achieve organizational objectives has been the great-est challenge to managers. Why do some people perform better than others? Why does the same person act differently at different times? These and many other questions related to work performance have been confronting managers continuously.

Motivating people to perform, higher than their normal physical and mental capacities, and to keep them satisfied is a very complex function of management.

Definition of Motivation:

Motivation is an inspirational process which impels the members of the team to pull their weight effec-tively to give their loyalty to the group, to carry out the tasks properly that they have accepted, and generally to play an effective part in the job that the group has undertaken.

In the words of Michael Jucious, ‘motivation is the act of stimulating someone or oneself to get a desired course of action, to push the right button to get a desired reaction’.

S. Zedeek and M. Blood define, ‘Motivation is a predisposition to act in a specific goal-directed way’.

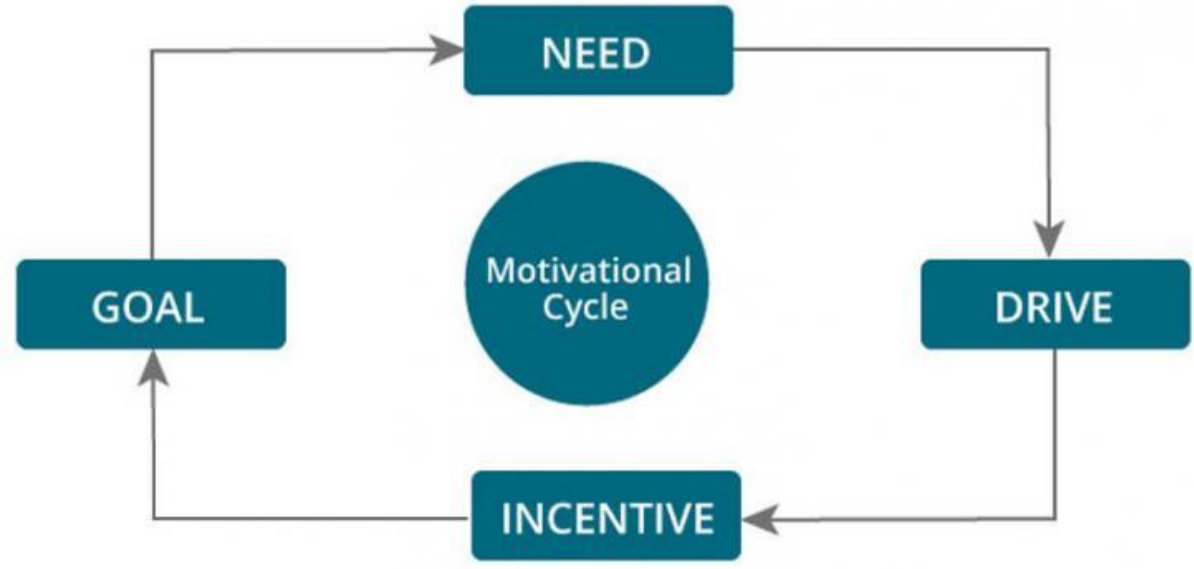
Why Some Incentives Are More Motivating Than Others
Obviously, not all incentives are created equal, and the rewards that you find motivating might not be enough to inspire another person to take action. Physiological, social, and cognitive factors can all play a role in what incentives you find motivating.

For example, you are more likely to be motivated by food when you are actually hungry versus when you are full. A teenage boy might be motivated to clean his room by the promise of a coveted video game while another person would find such a game completely unappealing.

"The value of an incentive can change over time and in different situations," writes Stephen L. Franzoi in his text Psychology: A Discovery Experience. "For example, gaining praise from your parents may have positive incentive value for you in some situations, but not in others. When you are home, your parents' praise may be a positive incentive. However, when your friends visit, you may go out of your way to avoid receiving parental praise, because your friends may tease you."

1.3 MOTIVES, NEEDS, DRIVES AND INCENTIVES

Motivation cycle is a transition of states within an organism that propels the organism toward the satisfaction of a particular need, where motivation itself is considered a hypothesized state. Psychologists use the concept of need to describe the motivational properties of behavior. The state of motivation is further comprised of four different states, which takes place in an organism to drive him towards each action. Each action is first initiated because of a particular need. The need drives the person into taking actions. Positive results, caused due to the actions, further acts as an incentive motivating a person towards the goal. But the individual can never stop after achieving a certain goal, and this phenomenon continues on and on. This phenomenon has been termed as *Motivational Cycle*.



Need

A need is lack or deficit of some necessity. It's a state of physical deprivation that causes tension within an organism. The tension caused when the organism is deprived of basic necessities of life as food, water, and sleep, causes the internal environment of an organism to be imbalanced. The imbalance caused by the need arouses the organism to maintain its balance. For any goal directed behavior, need is the first condition or stimulating factor.

Drive
Need leads to drive, which is the second step towards achieving goal. Drive can be defined as the state of tension or arousal produced by need. The drive can also be considered as the original source of energy that activates an organism. For instance, when an organism is hungry and/or thirsty, the organism seeks to reduce this drive by eating and/or drinking. Drive acts as a strong persistent stimulus to push an organism towards its goal. It is the state of heightened tension leading to restless activity and preparatory behavior.

Incentive
The object of the environment that activates, directs, and maintains behavior is called incentive. It can be anything as long as it has either positive or negative value in motivating behavior.
The incentive theory rests on the assumption that the behaving organism is well aware of his actions and the consequences received as a result. The theory also understands incentives as the motivation, which a person has to achieve any particular goal object. The motivated behavior is directed towards incentive and getting closer to the incentive provides satisfaction of the aroused drive.

For example: behavior like eating food is an incentive that reduces the drive of the person caused by the need to fulfill his hunger. The reduction of behavior then cuts off and restores balance in an organism.

According to Hilgard,
The incentive is something in the external environment that satisfies the need and thus reduces the drive through consummative activity.

Goal
The reduction of tension in the body can be considered as the goal of any motivated behavior. Let's go back to the example of a hungry man. A hungry man eats food, and his body restores to a balanced condition. This then reduces the tension. This reduction of tension as a result of an energized activity is called goal. Once the goal has been completed, the organism is again ready for another goal-motivated behavior.

Goals might be both positive or negative. Positive goals are the ones that an organism tries to attain, such as sexual companionship, food, victory etc. negative goals are the ones that an organism tries to escape from or avoid, such as embarrassing situations, punishments

These four steps continue on and on throughout the life-course of an organism. Because the needs are never ending, it leads to drive, which then lead to incentive and the goal.

For Example: The motivational cycle of the hungry man is over once when he eats and the goal is satisfied. But, the cycle will restart once the man gets hungry again. The cycle goes on and on only to end at the demise of an organism, at which point, the needs permanently stop. Motivational cycle means that behavior goes on in a sequence. Often times, a single motivated behavior can also fulfill multiple needs.

1.4 THEORETICAL PERSPECTIVES

Instinct Theory of Motivation

According to instinct theories, people are motivated to behave in certain ways because they are evolutionarily programmed to do so. An example of this in the animal world is seasonal migration. Animals do not learn to migrate to certain places at certain times each year; it is instead an inborn pattern of behavior. Instincts motivate some species to do this.

William James identified a list of human instincts that he believed were essential to survival, including fear, anger, love, shame, and modesty.[1] The main problem with this theory is that it did not really explain behavior, it just described it. James presumed that we act on impulse, but that leaves out all the learning/conditioning that informs behavior. By the 1920s, instinct theories were pushed aside in favor of other motivational theories, but contemporary evolutionary psychologists still study the influence of genetics and heredity on human behavior.

Drive Theory

According to the drive theory of motivation, people are motivated to take certain actions in order to reduce the internal tension that is caused by unmet needs. For example, you might be motivated to drink a glass of water in order to reduce the internal state of thirst. The drive theory is based on the concept of homeostasis, or the idea that the body actively works to maintain a certain state of balance or equilibrium. This theory is useful in explaining behaviors that have a strong biological or physiological component, such as hunger or thirst. The problem with the drive theory of motivation is that these behaviors are not always motivated purely by *drive*, or the state of tension or arousal caused by biological or physiological needs. For example, people often eat even when they are not really hungry.

Arousal Theory

The arousal theory of motivation suggests that people take certain actions to either decrease or increase levels of arousal. When arousal levels get too low, for example, a person might watch an exciting movie or go for a jog. When arousal levels get too high, on the other hand, a person would probably look for ways to relax, such as meditating or reading a book. According to this theory, we are motivated to maintain an optimal level of arousal, although this level can vary based on the individual or the situation.

Humanistic Theory

Humanistic theories of motivation are based on the idea that people also have strong cognitive reasons to perform various actions. This is famously illustrated in Abraham Maslow's hierarchy of needs, which describes various levels of needs and motivations. Maslow's hierarchy suggests that people are motivated to fulfill basic needs before moving on to other, more advanced needs. For example, people are first motivated to fulfill basic biological needs for food and shelter, then to progress through higher needs like safety, love, and esteem. Once these needs have been met, the primary motivator becomes the need for self-actualization, or the desire to fulfill one's individual potential. Maslow was interested in learning about what makes people happy and the things that they do to achieve that aim, rather than focusing on problematic

Extrinsic Motivation

- Going to work to get paid
- Studying to get a good grade
- Working hard to get a raise or recognition from your boss
- Tidying your house to avoid feeling embarrassed when company comes over

Intrinsic Motivation

- Working because you enjoy the job
- Studying because you find the subject interesting
- Tackling a new project because you love a challenge
- Tidying your house because a clean home keeps you calm

Expectancy Theory

The expectancy theory of motivation suggests that when we are thinking about the future, we formulate different expectations about what we think will happen. When we predict that there will most likely be a positive outcome, we believe that we are able to make that possible future a reality. This leads people to feel more motivated to pursue those likely outcomes. The theory proposes that motivations consist of three key elements:

- **Valence**: the value people place on the potential outcome
- **Instrumentality**: whether people believe that they have a role to play in the predicted outcome
- **Expectancy**: the belief that one has the capabilities to produce the outcome

Incentives

According to one theory of human motivation, actions are often inspired by a desire to gain outside reinforcement. The incentive theory is one of the major theories of motivation and suggests that behavior is motivated by a desire for reinforcement or incentives.

History of the Incentive Theory

Incentive theory began to emerge during the 1940s and 1950s, building on the earlier drive theories established by psychologists such as Clark Hull. Rather than focusing on more intrinsic forces behind motivation, the incentive theory proposes that people are pulled toward behaviors that lead to rewards and pushed away from actions that might lead to negative consequences.

Two people may act in different ways in the same situation based entirely on the types of incentives that are available to them at that time.

You can probably think of many different situations where your behavior was directly influenced by the promise of a reward or punishment. Perhaps you studied for an exam in order to get a good grade, ran a marathon in order to receive recognition, or took a new position at work in order to get a raise. All of these actions were influenced by an incentive to gain something in return for your efforts.

How Does Incentive Theory Work?

In contrast with other theories that suggest we are pushed into action by internal drives (such as the drive-reduction theory of motivation, arousal theory, and instinct theory), incentive theory instead suggests that we are pulled into action by outside incentives.

You can liken incentive theory to operant conditioning, where behaviors are performed in order to either gain reinforcement or avoid punishment. Incentive theory states that your actions are directed toward gaining rewards.

What type of rewards? Good grades are a type of incentive that can motivate you to study hard and do well in school. Gaining esteem and accolades from teachers and parents might be another incentive. Money is also an excellent example of an external reward that motivates behavior. In many cases, these external rewards can motivate you to do things that you might otherwise avoid, such as chores, work, and other tasks you find unpleasant.

- Incentives can be used to get people to engage in certain behaviors, but they can also be used to get people to stop performing certain actions.
- Incentives only become powerful if the individual places importance on the reward.

Rewards have to be obtainable in order to be motivating. For example, a student will not be motivated to earn a top grade on an exam if the assignment is so difficult that it is not realistically achievable.

1.5 BIOLOGICAL MOTIVES

Biological Motivation and Homeostasis:

Biological motives are called as physiological motives. These motives are essential for the survival of the organism. Such motives are triggered when there is imbalancement in the body. The body always tends to maintain a state of equilibrium called "Homeostasis"- in many of its internal physiological processes.

This balance is very essential for the normal life. Homeostasis helps to maintain internal physiological processes at optimal levels. The nutritional level, fluid level, temperature level, etc., are maintained at certain optimal level or homeostasis levels. When there is some variation in these levels the individual is motivated for restoring the state of equilibrium.

I) Physiological Motives:

a. Hunger motive:

We eat to live. The food we take is digested and nutritional substances are absorbed. The biochemical processes get their energy from the food in order to sustain life. When these substances are exhausted, some imbalancement exists.

We develop hunger motive in order to maintain homeostasis. This is indicated by contraction of stomach muscles causing some pain or discomfort called hunger pangs. Psychologists have demonstrated this phenomenon by experiments.

b. Thirst motive:

In our daily life regularly we take fluids in the form of water and other beverages. These fluids are essential for our body tissues for normal functioning. When the water level in the body decreases we develop motive to drink water.

Usually thirst motive is indicated by dryness of mouth. Experiments by psychologists have shown that just dried mouth getting wetted is not enough. We need to drink sufficient quantity of water to satiate our thirst.

c. Need for oxygen:

Our body needs oxygen continuously. We get it through continuous respiration. Oxygen is necessary for the purification of blood. We cannot survive without regular supply of oxygen. Lack of oxygen supply may lead to serious consequences like damage to brain or death.

d. Motive for regulation of body temperature:
Maintenance of normal body temperature (98.6°F or 37.0°C) is necessary. Rise or fall in the body temperature causes many problems. There are some automatic mechanisms to regulate body temperature, like sweating when the temperature rises above normal or, shivering when it falls below normal.

These changes motivate us to take necessary steps. For example, opening of windows, put on fans, take cool drinks, remove clothes, etc., when the temperature increases to above normal level; and closing doors and windows, wear sweaters, take hot beverages when temperature falls down. In this way we try to regulate the body temperature.

e. Need for sleep:
Sleep is an essential process for normal functioning of body and mind. When our body and mind are tired they need rest for rejuvenation of energy. It is observed that there is excess accumulation of a toxin called 'Lactic acid' when tired.

After sleep it disappears and the person becomes active. Sleep deprivation also leads to psychological problems like confusion, inability to concentrate, droopy eyelids, muscle tremors, etc.

f. Need for avoidance of pain:
No organism can continue to bear pain. Whenever we experience pain we try to avoid it. We are motivated to escape from painful stimulus. For example, when we are under hot sun we go to shade. When something is pinching we avoid it.

g. Drive for elimination of waste:
Our body cannot bear anything excess or anything waste. Excess water is sent out in the form of urine or sweat. So also digested food particles after absorption of nutritional substances are sent out in the form of stools. We experience discomfort until these wastes are eliminated.

h. Sex motive:
This is a biological motive, arises in the organism as a result of secretion of sex hormones-like androgens and estrogens. Sex need is not essential for the survival of the individual, but it is essential for the survival of the species. However, fulfillment of the sex need is not like satisfying hunger or thirst.

The society and the law exercise certain codes of conduct. Human being has to adhere to these rules. Usually this need is fulfilled through marriage.

i. Maternal drive:
This is an instinct or an inborn tendency. Every normal woman aspires to become a mother. Psychologists have

Motivation, Emotion and Attitudinal Processes 123 learnt from related studies that, this is a most powerful drive. That is why in many cases the women who cannot bear children of their

own, will sublimate that motive and satisfy it through socially acceptable ways, like working in orphan schools, baby sittings or adopting other's children.

II) Personal Motives:
In addition to the above said physiological and social motives, there are some other motives which are allied with both of the above said motives. These are highly personalized and very much individualized motives. The most important among them are:

a. Force of habits:
We see different people having formed different habits like chewing tobacco, smoking, alcohol consumption, etc. There may be good habits also like regular exercising, reading newspapers, prayers, meditations, etc. Once these habits are formed, they act as drivers and compel the person to perform the act. The specialty of habits is that, they motivate the individual to indulge in that action automatically.

b. Goals of life:
Every normal individual will have some goals in the life. They may be related to education, occupation, income, sports, acquisition of property, public service, social service, etc. Once a goal is set, he will be motivated to fulfil that goal. The goals people set, depend upon various factors like knowledge, information, guidance, support, personality, facilities available, aspirations, family and social background, etc.

c. Levels of aspirations:
Aspiration is aspiring to achieve or to get something or a goal. But such achievement depends upon the level of motivation the individual has. Every individual will have a goal in his life and strive to reach that goal. But the effort to attain that goal varies from one individual to another. The amount of satisfaction he gains depends upon his level of aspiration.

For example, if a student is expecting 80% of marks in examination, gets only 75%, he may be unhappy. On the other hand, a student expecting failure may feel very happy if he gets just 35% passing marks, because, the student with high level of aspiration works hard, whereas the student with low level may not.

Hence, always higher level of aspiration is advisable. However, it should be on par with his abilities also. Because, if an individual aspires for higher level of achievement without possessing required ability, he will have to face frustration and disappointment.

d. Attitudes and interests:
Our attitudes and interests determine our motivation. These are specific to individual. For example, a person within the family, may have positive attitude towards family planning and all others having negative attitudes.

So also, interests differ from one individual to another. Example, interest in sports, T.V, etc. Whenever we have a positive attitude, we will have motivation to attain. In negative attitude, we will be motivated to avoid. If a person is interested in music, he will be motivated to learn it. In this way, our personal motives determine our behaviour.

Unconscious motivation:
Sigmund Freud, the famous psychologist has explained elaborately about unconscious motivation. According to him, there are certain motives of which we are unaware, because they

operate from our unconscious. These motives or desires which are repressed by our conscious remain in our unconscious and will be influencing our behaviour. Our irrational behaviour, the slip of tongue, slip of pen, amnesia, multiple personality, somnambulism, etc., are some examples of such behaviours for which we do not have answers apparently. These motives can be delineated only by psychoanalysis. Many times psychosomatic disorders like paralysis, headaches, gastric ulcers, etc., also may be due to unconscious motivation.

1.6 STIMULUS MOTIVES SENSORY STIMULATION

Sensory stimulation is the input and sensation you receive when one or more of your senses is activated. This type of stimulation is important for infant development and can be used to improve the well-being of developmentally disabled adults, people with neurocognitive disorders, and older adults.

The 5 human senses

Sensory stimulation is the activation of one or more of our five senses:

- Seeing (visual): When light passes through your cornea (transparent eye surface) to your pupil (the opening to the inside of your eye). After passing through your pupil, it reaches your lens, which focuses it on your retina (the back of your eye), where it's converted into a nerve signal and carried by your optic nerve to your brain.
- Hearing (auditory): When sound vibrations cross your eardrum to your inner ear, change into nerve signals, and are transmitted to your brain by your auditory nerve.
- Touching (tactile): When nerve endings (receptor cells located throughout your body) transmit signals to your brain and it interprets them as pain, pressure, vibration, temperature, and body position.
- Tasting (gustatory): When your approximately 10,000 taste buds (receptor cells) send signals to your brain, identifying sweet, salty, sour, bitter, and umami (savory) flavors. Taste is also affected by also the smell, temperature, and texture.
- Smelling (olfactory): When specialized cells (olfactory sensory neurons) high in your nose send signals to your brain for interpretation and identification. There are also olfactory sensory neurons on the roof of your mouth.

Sensory stimulation for babies

Because babies learn about the world around them with their senses, sensory stimulation is linked to:

- Emotional development
- Cognitive development
- Physical development

Repetitive activities that stimulate the senses can help babies learn and reach developmental milestones.

Examples of sensory stimulation for babies include:

- Rattles
- Mobiles
- Hearing lullabies
- Toys
- Peek-a-boo games
- Bath time

Sensory stimulation for young children

Sensory stimulation continues to be beneficial as babies progress from infants to preschoolers. Sensory play helps children engage with the world in a way that helps them grow and develop.

For young children, sensory play includes any activity that stimulates a child's sense of touch, smell, taste, sight, movement, and hearing. This kind of play helps create connections in the brain that allow for more complex thoughts and tasks. Sensory activities also help young brains better process and respond to sensory information.

For example, a child may find it difficult to play with another child if there are other sensory stimulations — such as loud noises — in their environment. Through sensory play activities, the child can learn to block out stimulations that are not as important and focus on ones that are, such as social interactions with another child. Sensory play also supports language development, cognitive growth, motor skills, and problem-solving skills.

Sensory stimulation activities for children include:

- Banging on drums (or anything that makes a noise)
- Playing in a sandbox
- Adding food coloring to water
- Making smoothies
- Blowing whistles
- Making shadow puppets
- Playing catch with a balloon
- Comparing sweet and savory snacks
- Finger painting

Sensory stimulation for those with neurocognitive disorders

Sensory stimulation has been widely used in caring for people with neurocognitive disorders, previously referred to as dementia. Typically, this uses everyday objects to evoke positive feelings through the arousal of the senses.

According to the Alzheimer's Society, sensory stimulation activities for people with neurocognitive disorders include:

- Preparing or cooking food
- Playing board games or working on puzzles
- Singing or playing instruments
- Painting or drawing
- Receiving a hand massage
- Dancing
- Walking

A 2018 study Trusted Source published in the journal Clinical Interventions in Aging concluded that sensory stimulation, along with memory stimulation, improved communication.

A 2002 article Trusted Source published in the journal BMJ concluded that aromatherapy (smell) and bright light therapy (sight) are safe and effective ways to address psychiatric and behavioral issues for older adults with dementia. **Some of the issues mentioned in the study included:**

- Depression
- Agitation

- Aggression
- Delusions
- Sleep disturbances

Sensory stimulation for developmentally disabled adults
According to a 2010 study, sensory stimulation through visual, tactile, gustatory, auditory, and olfactory activities can enhance the lives of low-functioning developmentally disabled adults by giving them more opportunities to use their senses and communication skills.

Some examples of sensory stimulation for developmentally disabled adults include:
- Puzzles
- Scented markers
- Talk radio
- Weighted blankets
- Fidget toys

Sensory stimulation for older adults
Sensory stimulation can also improve the well-being of older adults with or without neurocognitive disorders by calling up positive memories, reinforcing relationships with loved ones, and reducing anxiety and depression Trusted Source.

Sensory stimulation activities for older adults could include:
- Listening to different types of music
- Listening to recordings of natural sounds
- Touching items with varying textures, such as sandpaper, pine cones, shells, and stones
- Light therapy
- Movies and videos
- Photos of loved ones
- Optical illusions
- Gardening
- Essential oils, such as peppermint, lavender, bergamot, and rosemary
- Tasting foods, such as berries, coconut, black and green tea, and cinnamon

Exploration and manipulation, optimal arousal,
The arousal theory of motivation states that people are motivated to seek out activities or situations that maintain or increase their level of arousal.

Arousal can be thought of as a continuum, with low levels of arousal being associated with boredom and high levels of arousal being associated with anxiety.

What Is Arousal Theory?
The Arousal Theory of Motivation is a psychological theory that suggests that one's levels of arousal play an important role in determining one's level of motivation.

This theory states that individuals are motivated to seek out stimulation when they have low levels of arousal, but will become bored and unmotivated when they become too highly aroused (APA).

The Arousal Theory of Motivation was first proposed by Henry Murray in 1938. Murray's theory was based on his observations of humans' needs for achievement, power, and affiliation. He believed that these needs were motivated by a desire to reduce one's levels of arousal.

The Arousal Theory of Motivation has been further developed over the years by other psychologists, such as Robert Zajonc (1965) and John Atkinson (1957).

Zajonc proposed that there is an optimal level of arousal for task performance, and that individuals will seek out stimulation when they are below this optimum level.

Atkinson suggested that people have different "arousal thresholds" - meaning that some people require more stimulation than others to perform at their best.

According to the Arousal Theory, there are two main factors that influence one's level of arousal: challenge and threat. When people face challenges or threats in their environment, it causes them to experience heightened levels of arousal. In turn, these higher levels of arousal can motivate people to take action or increase their efforts toward achieving a goal or objective.

There are two primary outshoots of arousal theory: Clark Hull's drive reduction theory and optimal arousal theory.

Drive Reduction Theory

According to Clark Hull's drive reduction theory, behavior originates from physiological needs for food, water, and air.

These needs create tension away from homeostasis. When needs are met in homeostasis, arousal is low. However, when needs are not met, they give rise to a drive state.

Animals are motivated to reduce this drive. Behaviors such as eating, drinking, and breathing reduce the need by restoring homeostasis.

They can also be reinforced and strengthened through drive reduction.

According to drive reduction theory, people will often engage in risky or dangerous behaviors — like thrillseeking or drug use — in an attempt to achieve a desired level of arousal.

Central to the concept of Drive Reduction theory is the idea of acquired motivation, which is the tendency for organisms to repeat behaviors that lead to drive reduction (Hull, 1952).

One key criticism of Drive Reduction theory is that it does not account for all forms of motivation. In particular, it does not explain why people engage in activities that do not reduce drives, such as exploration and play.

Additionally, the theory does not explain how people can be motivated to achieve goals that may be impossible to achieve, such as winning the lottery or becoming an Olympic athlete.

A second criticism of Drive Reduction theory is that it relies heavily on animal research and does not take into account the unique needs and motivations of human beings. In particular, this research has recorded a phenomenon known as drive induction.

Drive induction is the observation that an animal's motivation to reduce a drive can actually increase when the animal is placed in an environment where they are able to consume a reinforcer.

For example, if a rat is placed in a maze where the only food source is on the other side, the rat may experience an increase in motivation to move through if they had been able to eat the food freely at another time (Mills, 1978).

1.7 OPTIMAL AROUSAL

Optimal arousal theory posits that there is an ideal level of anxiety or stress that leads to peak performance. This level is different for every individual, and can change depending on the task at hand. Too much or too little arousal will lead to suboptimal performance. The theory was first proposed by Yerkes and Dodson in 1908, who found that there was an inverted-U relationship between task difficulty and performance.

That is, as task difficulty increased, so did performance up to a certain point, after which performance decreased. They attributed this to the fact that easy tasks do not provide enough stimulation, while difficult tasks provide too much stimulation. The optimal level of arousal lies in the middle. In general, high arousal can improve performance on easy tasks and impair performance on difficult tasks.

Zuckerman (1984) wrote about sensation seeking in the context of optimal arousal theory. He considered it to be an individual difference trait, where people differ in how much stimulation they require in order to feel motivated and alert. In other words, sensation seekers have a higher arousal threshold - they require more stimulation than the average person in order to feel engaged and interested.

This theory is supported by a great deal of research evidence, including studies on animals as well as humans. For example, Zuckerman's studies show that certain genes may be linked with sensation seeking behavior.

Additionally, research has found that individuals who score high on tests of arousal motivation tend to prefer high-intensity activities such as extreme sports or drugs like cocaine (Zuckerman, 1984).

Socialization

The optimal level of arousal theory can be applied to explain why people seek out social activities such as going to the club or attending a party. According to the theory, people are motivated to seek out situations that provide the right amount of stimulation - not too much and not too little (Gross, 1998).

For some people, going to the club may provide the perfect level of stimulation. The loud music, bright lights, and social interaction may be just enough to get them feeling excited and engaged. On the other hand, for others, the same environment may be overwhelming and lead to feelings of anxiety. Thus, these people may prefer more relaxed activities such as reading or taking a walk in nature. These activities provide a detachment from arousal, bringing the person carrying them out back to homeostasis (Gross, 1998).

Hunger

A classic example of arousal theory in action is hunger. One factor that contributes to the motivation to eat is the sensation of hunger itself.

For some people, feeling hungry can actually increase arousal and make them more motivated to find food.

This may be because hunger causes the release of certain hormones, including adrenaline and cortisol, that increase energy levels and alertness.

However, for other people, hunger may actually decrease arousal by causing feelings of sluggishness, fatigue, or distraction. This may be due to individual differences in sensitivity to certain hormonal changes associated with hunger.

Additionally, some individuals may have a lower arousal threshold, meaning that they are more quickly affected by hunger and require less stimulation to feel motivated.

1.8 SOCIAL MOTIVES

Physiological motives discussed above pertain to both animals as well as human beings, but the social motives are specific only to human beings. These are called social motives, because they are learnt in social groups as a result of interaction with the family and society. That is why their strength differs from one individual to another. Many social motives are recognised by psychologists. Some of the common social motives are:

a. Achievement motive:

Achievement motivation refers to a desire to achieve some goal. This motive is developed in the individual who has seen some people in the society attaining high success, reaching high positions and standards.

He/she develops a concern to do better, to improve performance. David C Mc Clelland who conducted a longitudinal study on characteristics of high and low achievers found that the high achievers choose and perform better at challenging tasks, prefers personal responsibility, seeks and utilizes feedback about the performance standard, having innovative ideas to improve performance.

On the other hand, low achievers do not accept challenges, puts on average standards and accepts failures easily. Parents must try to inculcate leadership qualities in children for better achievement in their future life.

They must allow children to take decisions independently, and guide them for higher achievement from the childhood, so that the children develop high achievement motivation.

b. Aggressive motive:

It is a motive to react aggressively when faced frustrations. Frustration may occur when a person is obstructed from reaching a goal or when he is insulted by others. Even in a fearful and dangerous do or die situation the individual may resort to aggressive behaviour. Individual expresses such behaviour to overcome opposition forcefully, which may be physical or verbal aggression.

c. Power motive:

People with power motive will be concerned with having an impact on others. They try to influence people by their reputation. They expect people to bow their heads and obey their instructions.

Usually people with high power motive choose jobs, where they can exert their powers. They want people as followers. They expect high prestige and recognition from others. For example, a person may aspire to go for jobs like Police Officer, Politician, Deputy Commissioner, etc.

d. Acquisitive motive:
This motive directs the individual for the acquisition of material property. It may be money or other property. This motive arises as we come across different people who have earned a lot of money and leading a good life. It is a human tendency to acquire all those things which appear attractive to him.

e. Curiosity motive:
This is otherwise called stimulus and exploration motive. Curiosity is a tendency to explore and know new things. We see people indulge in a travelling to look at new places, new things and new developments taking place outside their environment.

People want to extend their knowledge and experiences by exploring new things. Curiosity motive will be very powerful during childhood. That is why they do not accept any toy or other articles unless they examine them from different angles, even at the cost of spoiling or breaking the objects.

f. Gregariousness:
This is also known as affiliation need. Gregariousness is a tendency to associate oneself with other members of the group or same species. The individual will be interested in establishing, maintaining and repairing friendly relationships and will be interested in participating in group activities.

Individual will conform to social norms, mores and other ethical codes of the groups in which he/she is interested. To the greater extent gregariousness is developed because many of the needs like basic needs, safety and security needs are fulfilled.

In addition to the above there are some other social motives like need for self-esteem, social approval, self-actualization, autonomy, master motive, combat, defense, abasement, etc.

1.9 CHAPTER SUMMARY

Abraham Lincoln, until past forty, was a failure in almost all activities he undertook. When asked about the change he said, ‘My father taught me to work but did not teach me to love my work. I hit that accidentally, when I was past forty’. This ‘love or will to do’ (called motivation) depends on the strength of people’s motives. Motives are the expressed needs and could be conscious or subconscious. They are always directed towards goals. Motivating people to perform better and thus to achieve organizational objectives has been the great-est challenge to managers. Why do some people perform better than others? Why does the same person act differently at different times? These and many other questions related to work performance have been confronting managers continuously. "The value of an incentive can change over time and in different situations," writes Stephen L. Franzoi in his text Psychology: A Discovery Experience. "For example, gaining praise from your parents may have positive incentive value for you in some situations, but not in others. When you are home, your parents' praise may be

a positive incentive. However, when your friends visit, you may go out of your way to avoid receiving parental praise, because your friends may tease you." Biological motives are called as physiological motives. These motives are essential for the survival of the organism. Such motives are triggered when there is imbalancement in the body. The body always tends to maintain a state of equilibrium called "Homeostasis"- in many of its internal physiological processes. This balance is very essential for the normal life. Homeostasis helps to maintain internal physiological processes at optimal levels. The nutritional level, fluid level, temperature level, etc., are maintained at certain optimal level or homeostasis levels. When there is some variation in these levels the individual is motivated for restoring the state of equilibrium.

1.10 REVIEW QUESTIONS

SHORT ANSWER TYPE QUESTIONS

1. Explain the drive reduction theory of motivation.
2. Explain Yerkes- Dodson law.
3. Define biogenic motives, psychogenic motives, and sociogenic motives.
4. Define motivation.
5. Explain motivational cycle.

LONG ANSWER TYPE QUESTIONS

1. What is thirst motivation? Explain cellular- dehydration thirst.
2. Explain motivational cycle with the help of a diagram.
3. Explain sociogenic motive and its types.
4. What do you understand by conflict? Explain its causes.
5. Explain social motives in brief.

1.11 MULTIPLE CHOICE QUESTIONS

1. If the lateral hypothalamus is destroyed, a rat will _____.
   a. Drink more water than biologically needed
   b. Refuse to drink until forced to do so
   c. Eat until it become obese
   d. Refuse to eat until forced fed

2. If your body is dehydrated, but you are not thirsty, we would say that you have
   a. A drive but not a need
   b. A need but not a drive
   c. Both a drive and a need
   d. Neither a drive nor a need

3. The maintenance of steady states of temperature and blood pressure are examples of
   a. Thermostatic
   b. Homeostasis
   c. Intrinsic motivation
   d. Biological rhythm

4. What is the correct order of needs in Maslow's hierarchy?
   a. Physiological; esteem; safety; self-actualisation; love and belonging
   b. Self-actualisation; physiological; safety; love and belonging; esteem
   c. Physiological; safety; love and belonging; esteem; self-actualisation
   d. Self-actualisation; safety; love and belonging; esteem; physiological

5. The _____ describes the relationship between arousal level, task difficulty, and efficiency of performance
   a. Arousal theory
   b. Drive reduction theory

c. Yerkes-Dodson law
d. Inverted-U function

6. **_____ defined motivation as "the factors that direct and energize the behavior of humans and other organisms".**
   a. Nolen-Hoeksema et al
   b. Feldman
   c. Feist and Rosenberg
   d. Chamorro- Premuzic
7. **"The perceived states of tension that occur when our bodies are deficient in some need, creating an urge to relieve the tension" is known as ____**
   a. Incentives
   b. Drives
   c. Needs
   d. Mastery
8. **The needs related to hunger, thirst, sleep, sex, avoidance of pain and so on are included in ___**
   a. Primary Motivation
   b. Secondary Motivation
   c. Intrinsic Motivation
   d. Extrinsic Motivation
9. **"An individual treks to the highest point of a mountain and he/ she is very proud of his/ her accomplishment of reaching to the top" this example explains which component of intrinsic motivation?**
   a. Challenge
   b. Enjoyment
   c. Mastery
   d. Autonomy and self determination
10. **Which of the following is not a component of emotion?**
    a. Cognitive appraisal
    b. Subjective experience
    c. Enjoyment
    d. Response to emotion

UNIT II
EMOTIONS AND STRESS

STRUCTURE

2.1 Learning Objective
2.2 Introduction
2.3 Expression of Emotions
2.4 Emotions and ANS
2.5 Brain and Emotions
2.6 Theories of Emotions
2.7 Stress and Stressors
2.8 Coping Styles
2.9 Chapter Summary
2.10Review Questions
2.11Multiple Choice Questions

2.1 LEARNING OBJECTIVE

After completing this unit, you will be able to:

- Explain the major theories of emotion.
- Describe the role that limbic structures play in emotional processing.
- Understand the ubiquitous nature of producing and recognizing emotional expression.
- Define emotions in terms of different theories.
- Explain the concept of emotions according to each theory.
- Put forward the various theories of emotions.
- Identify and explain the typical factors that explain emotions under each theory.
- Elucidate the similarities and differences among the various theories of emotions.

2.2 INTRODUCTION

Everyone experiences stress to some degree. The way you respond to stress, however, makes a big difference to your overall well-being. Sometimes, the best way to manage your stress involves changing your situation. At other times, the best strategy involves changing the way you respond to the situation. Developing a clear understanding of how stress impacts your physical and mental health is important. It's also important to recognize how your mental and physical health affects your stress level.

Signs of Stress

Stress can be short-term or long-term. Both can lead to a variety of symptoms, but chronic stress can take a serious toll on the body over time and have long-lasting health effects.

Some common signs of stress include:

- Changes in mood
- Clammy or sweaty palms
- Decreased sex drive
- Diarrhea
- Difficulty sleeping

- Digestive problems
- Dizziness
- Feeling anxious
- Frequent sickness
- Grinding teeth
- Headaches
- Low energy
- Muscle tension, especially in the neck and shoulders
- Physical aches and pains
- Racing heartbeat
- Trembling

Identifying Stress
What does stress feel like? What does stress feel like? It often contributes to irritability, fear, overwork, and frustration. You may feel physically exhausted, worn out, and unable to cope.

Stress is not always easy to recognize, but there are some ways to identify some signs that you might be experiencing too much pressure. Sometimes stress can come from an obvious source, but sometimes even small daily stresses from work, school, family, and friends can take a toll on your mind and body.

If you think stress might be affecting you, there are a few things you can watch for:
- Psychological signs such as difficulty concentrating, worrying, anxiety, and trouble remembering
- Emotional signs such as being angry, irritated, moody, or frustrated
- Physical signs such as high blood pressure, changes in weight, frequent colds or infections, and changes in the menstrual cycle and libido
- Behavioral signs such as poor self-care, not having time for the things you enjoy, or relying on drugs and alcohol to cope

Stress vs. Anxiety
Stress can sometimes be mistaken for anxiety, and experiencing a great deal of stress can contribute to feelings of anxiety. Experiencing anxiety can make it more difficult to cope with stress and may contribute to other health issues, including increased depression, susceptibility to illness, and digestive problems.

Stress and anxiety contribute to nervousness, poor sleep, high blood pressure, muscle tension, and excess worry. In most cases, stress is caused by external events, while anxiety is caused by your internal reaction to stress. Stress may go away once the threat or the situation resolves, whereas anxiety may persist even after the original stressor is gone.

Causes of Stress
There are many different things in life that can cause stress. Some of the main sources of stress include work, finances, relationships, parenting, and day-to-day inconveniences.

Stress can trigger the body's response to a perceived threat or danger, known as the fight-or-flight response. During this reaction, certain hormones like adrenaline and cortisol are released. This speeds the heart rate, slows digestion, shunts blood flow to major muscle groups, and

changes various other autonomic nervous functions, giving the body a burst of energy and strength.

Originally named for its ability to enable us to physically fight or run away when faced with danger, the fight-or-flight response is now activated in situations where neither response is appropriate—like in traffic or during a stressful day at work.

When the perceived threat is gone, systems are designed to return to normal function via the relaxation response. But in cases of chronic stress, the relaxation response doesn't occur often enough, and being in a near-constant state of fight-or-flight can cause damage to the body.

Stress can also lead to some unhealthy habits that have a negative impact on your health. For example, many people cope with stress by eating too much or by smoking. These unhealthy habits damage the body and create bigger problems in the long-term.5

Mental Health in the Workplace Webinar
On May 19, 2022, Verywell Mind hosted a virtual Mental Health in the Workplace webinar, hosted by Editor-in-Chief Amy Morin, LCSW. If you missed it, check out this recap to learn ways to foster supportive work environments and helpful strategies to improve your well-being on the job.

Types of Stress
Not all types of stress are harmful or even negative. Some of the different types of stress that you might experience include:

- Acute stress: Acute stress is a very short-term type of stress that can either be positive or more distressing; this is the type of stress we most often encounter in day-to-day life.
- Chronic stress: Chronic stress is stress that seems never-ending and inescapable, like the stress of a bad marriage or an extremely taxing job; chronic stress can also stem from traumatic experiences and childhood trauma.
- Episodic acute stress: Episodic acute stress is acute stress that seems to run rampant and be a way of life, creating a life of ongoing distress.
- Eustress: Eustress is fun and exciting. It's known as a positive type of stress that can keep you energized. It's associated with surges of adrenaline, such as when you are skiing or racing to meet a deadline.

The three main types of negative stress are acute stress, chronic stress, and episodic acute stress. Positive stress, known as eustress, can be fun and exciting, but it can also take a toll.

Impact of Stress
Stress can have several effects on your health and well-being. It can make it more challenging to deal with life's daily hassles, affect your interpersonal relationships, and have detrimental effects on your health. The connection between your mind and body is apparent when you examine stress's impact on your life.

Feeling stressed over a relationship, money, or living situation can create physical health issues. The inverse is also true. Health problems, whether you're dealing with high blood pressure or diabetes, will also affect your stress level and mental health. When your brain experiences high degrees of stress, your body reacts accordingly.

Serious acute stress, like being involved in a natural disaster or getting into a verbal altercation, can trigger heart attacks, arrhythmias, and even sudden death. However, this happens mostly in individuals who already have heart disease.

Stress also takes an emotional toll. While some stress may produce feelings of mild anxiety or frustration, prolonged stress can also lead to burnout, anxiety disorders, and depression.

Chronic stress can have a serious impact on your health as well. If you experience chronic stress, your autonomic nervous system will be overactive, which is likely to damage your body.

Treatments for Stress
Stress is not a distinct medical diagnosis and there is no single, specific treatment for it. Treatment for stress focuses on changing the situation, developing stress coping skills, implementing relaxation techniques, and treating symptoms or conditions that may have been caused by chronic stress.

Some interventions that may be helpful include therapy, medication, and complementary and alternative medicine (CAM).

Psychotherapy
Some forms of therapy that may be particularly helpful in addressing symptoms of stress including cognitive behavioral therapy (CBT) and mindfulness-based stress reduction (MBSR). CBT focuses on helping people identify and change negative thinking patterns, while MBSR utilizes meditation and mindfulness to help reduce stress levels.

Medication
Medication may sometimes be prescribed to address some specific symptoms that are related to stress. Such medications may include sleep aids, antacids, antidepressants, and anti-anxiety medications.

Complementary and Alternative Medicine
Some complementary approaches that may also be helpful for reducing stress include acupuncture, aromatherapy, massage, yoga, and meditation.

Coping With Stress
Although stress is inevitable, it can be manageable. When you understand the toll it takes on you and the steps to combat stress, you can take charge of your health and reduce the impact stress has on your life.

- Learn to recognize the signs of burnout. High levels of stress may place you at a high risk of burnout. Burnout can leave you feeling exhausted and apathetic about your job. When you start to feel symptoms of emotional exhaustion, it's a sign that you need to find a way to get a handle on your stress.
- Try to get regular exercise. Physical activity has a big impact on your brain and your body. Whether you enjoy Tai Chi or you want to begin jogging, exercise reduces stress and improves many symptoms associated with mental illness.
- Take care of yourself. Incorporating regular self-care activities into your daily life is essential to stress management. Learn how to take care of your mind, body, and spirit and discover how to equip yourself to live your best life.

- Practice mindfulness in your life. Mindfulness isn't just something you practice for 10 minutes each day. It can also be a way of life. Discover how to live more mindfully throughout your day so you can become more awake and conscious throughout your life.

EMOTIONS

As we move through our daily lives, we experience a variety of emotions. An emotion is a subjective state of being that we often describe as our feelings. The words emotion and mood are sometimes used interchangeably, but psychologists use these words to refer to two different things. Typically, the word emotion indicates a subjective, affective state that is relatively intense and that occurs in response to something we experience (figure below). 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 (Beedie, Terry, Lane, & Devonport, 2011). Here we will focus on emotion, and you will learn more about mood in the chapter that covers psychological disorders.

(a) (b)

We can be at the heights of joy or in the depths of despair. We might feel angry when we are betrayed, fear when we are threatened, and surprised when something unexpected happens. This section will outline some of the most well-known theories explaining our emotional experience and provide insight into the biological bases of emotion. This section closes with a discussion of the ubiquitous nature of facial expressions of emotion and our abilities to recognize those expressions in others.

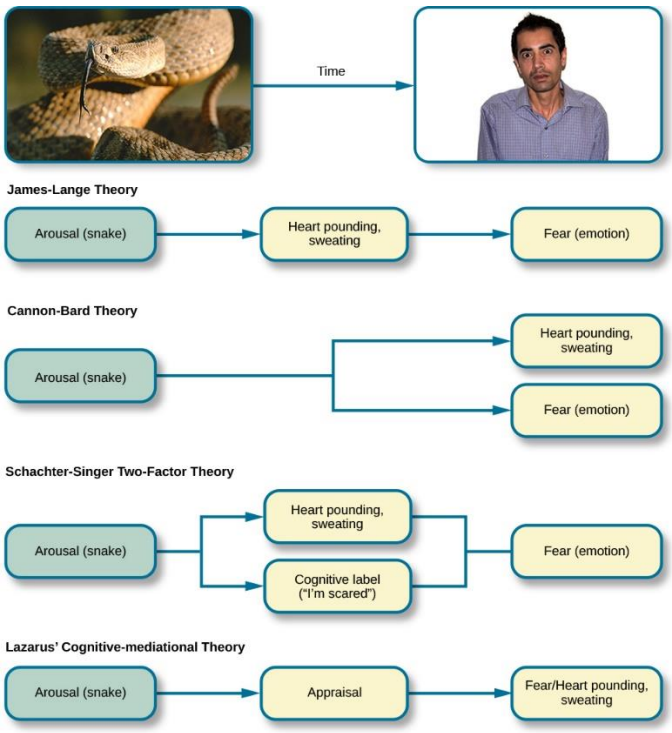
THEORIES OF EMOTION

Our emotional states are combinations of physiological arousal, psychological appraisal, and subjective experiences. Together, these are known as the components of emotion. These appraisals are informed by our experiences, backgrounds, and cultures. Therefore, different people may have different emotional experiences even when faced with similar circumstances. Over time, several different theories of emotion, shown in the figure below, have been proposed to explain how the various components of emotion interact with one another. The James-Lange

theory of emotion asserts that emotions arise from physiological arousal. Recall what you have learned about the sympathetic nervous system and our fight or flight response when threatened. If you were to encounter some threat in your environment, like a venomous snake in your backyard, your sympathetic nervous system would initiate significant physiological arousal, which would make your heart race and increase your respiration rate. According to the James-Lange theory of emotion, you would only experience a feeling of fear after this physiological arousal had taken place. Furthermore, different arousal patterns would be associated with different feelings.

Other theorists, however, doubted that the physiological arousal that occurs with different types of emotions is distinct enough to result in the wide variety of emotions that we experience. Thus, the Cannon-Bard theory of emotion was developed. According to this view, physiological arousal and emotional experience occur simultaneously, yet independently (Lang, 1994). So, when you see the venomous snake, you feel fear at exactly the same time that your body mounts its fight or flight response. This emotional reaction would be separate and independent of the physiological arousal, even though they co-occur.

The James-Lange and Cannon-Bard theories have each garnered some empirical support in various research paradigms. For instance, Chwalisz, Diener, and Gallagher (1988) conducted a study of the emotional experiences of people who had spinal cord injuries. They reported that individuals who were incapable of receiving autonomic feedback because of their injuries still experienced emotion; however, there was a tendency for people with less awareness of autonomic arousal to experience less intense emotions. More recently, research investigating the facial feedback hypothesis suggested that suppression of facial expression of emotion lowered the intensity of some emotions experienced by participants (Davis, Senghas, & Ochsner, 2009). In both of these examples, neither theory is fully supported because physiological arousal does not seem to be necessary for the emotional experience, but this arousal does appear to be involved in enhancing the intensity of the emotional experience.
The Schachter-Singer two-factor theory of emotion is another variation on theories of emotions that takes into account both physiological arousal and the emotional experience. According to this theory, emotions are composed of two factors: physiological and cognitive. In other words, physiological arousal is interpreted in context to produce the emotional experience. In revisiting our example involving the venomous snake in your backyard, the two-factor theory maintains that the snake elicits sympathetic nervous system activation that is labeled as fear given the context, and our experience is that of fear.



It is important to point out that Schachter and Singer believed that physiological arousal is very similar across the different types of emotions that we experience, and therefore, the cognitive appraisal of the situation is critical to the actual emotion experienced. In fact, it might be possible to misattribute arousal to an emotional experience if the circumstances were right (Schachter & Singer, 1962).

To test their idea, Schachter and Singer performed a clever experiment. Male participants were randomly assigned to one of several groups. Some of the participants received injections of epinephrine that caused bodily changes that mimicked the fight-or-flight response of the sympathetic nervous system; however, only some of these men were told to expect these reactions as side effects of the injection. The other men that received injections of epinephrine were told either that the injection would have no side effects or that it would result in a side effect unrelated to a sympathetic response, such as itching feet or headache. After receiving these injections, participants waited in a room with someone else they thought was another subject in the research project. In reality, the other person was a confederate of the researcher. The confederate engaged in scripted displays of euphoric or angry behavior (Schachter & Singer, 1962).

When those subjects who were told that they should expect to feel symptoms of physiological arousal were asked about any emotional changes that they had experienced related to either euphoria or anger (depending on how their confederate behaved), they reported none. However, the men who weren't expecting physiological arousal as a function of the injection were more likely to report that they experienced euphoria or anger as a function of their assigned confederate's behavior. While everyone that received an injection of epinephrine experienced the same physiological arousal, only those who were not expecting the arousal used context to interpret the arousal as a change in emotional state (Schachter & Singer, 1962). Strong emotional responses are associated with strong physiological arousal. This has led some to suggest that the signs of physiological arousal, which include increased heart rate, respiration rate, and sweating, might serve as a tool to determine whether someone is telling the truth or not. The assumption is that most of us would show signs of physiological arousal if we were

being dishonest with someone. A polygraph, or lie detector test, measures the physiological arousal of an individual responding to a series of questions. Someone trained in reading these tests would look for answers to questions that are associated with increased levels of arousal as potential signs that the respondent may have been dishonest on those answers. While polygraphs are still commonly used, their validity and accuracy are highly questionable because there is no evidence that lying is associated with any particular pattern of physiological arousal (Saxe & Ben-Shakhar, 1999).

The relationship between our experiencing of emotions and our cognitive processing of them, and the order in which these occur, remains a topic of research and debate. Lazarus (1991) developed the cognitive-mediational theory that asserts our emotions are determined by our appraisal of the stimulus. This appraisal mediates between the stimulus and the emotional response, and it is immediate and often unconscious. In contrast to the Schachter-Singer model, the appraisal precedes a cognitive label. You will learn more about Lazarus's appraisal concept when you study stress, health, and lifestyle. Two other prominent views arise from the work of Robert Zajonc and Joseph LeDoux. Zajonc asserted that some emotions occur separately from or prior to our cognitive interpretation of them, such as feeling fear in response to an unexpected loud sound (Zajonc, 1998). He also believed in what we might casually refer to as a gut feeling—that we can experience an instantaneous and unexplainable like or dislike for someone or something (Zajonc, 1980). LeDoux also views some emotions as requiring no cognition: some emotions completely bypass contextual interpretation. His research into the neuroscience of emotion has demonstrated the amygdala's primary role in fear (Cunha, Monfils, & LeDoux, 2010; LeDoux 1996, 2002). A fear stimulus is processed by the brain through one of two paths: from the thalamus (where it is perceived) directly to the amygdala or from the thalamus through the cortex and then to the amygdala. The first path is quick, while the second enables more processing about details of the stimulus. In the following section, we will look more closely at the neuroscience of emotional response.

THE BIOLOGY OF EMOTIONS

Earlier, you learned about the limbic system, which is the area of the brain involved in emotion and memory (figure below). The limbic system includes the hypothalamus, thalamus, amygdala, and the hippocampus. The hypothalamus plays a role in the activation of the sympathetic nervous system that is a part of any given emotional reaction. The thalamus serves as a sensory relay center whose neurons project to both the amygdala and the higher cortical regions for further processing. The amygdala plays a role in processing emotional information and sending that information on to cortical structures (Fossati, 2012). The hippocampus integrates emotional experience with cognition (Femenía, Gómez-Galán, Lindskog, & Magara, 2012).

Work through this Open Colleges interactive 3D brain simulator for a refresher on the brain's parts and their functions. To begin, click the "Start Exploring" button. To access the limbic system, click the plus sign in the right-hand menu (set of three tabs).

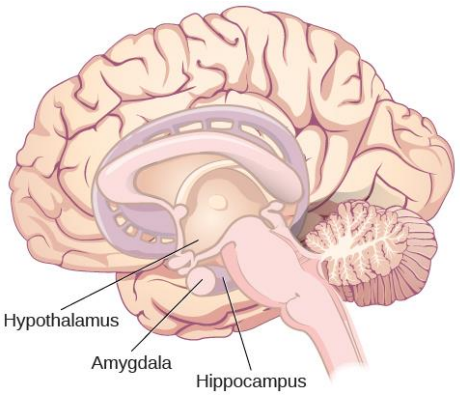
Amygdala

The amygdala has received a great deal of attention from researchers interested in understanding the biological basis for emotions, especially fear and anxiety (Blackford & Pine, 2012; Goosens & Maren, 2002; Maren, Phan, & Liberzon, 2013). The amygdala is composed of various subnuclei, including the basolateral complex and the central nucleus (figure below). The basolateral complex has dense connections with a variety of sensory areas of the brain. It is critical for classical conditioning and for attaching emotional value to learning processes and

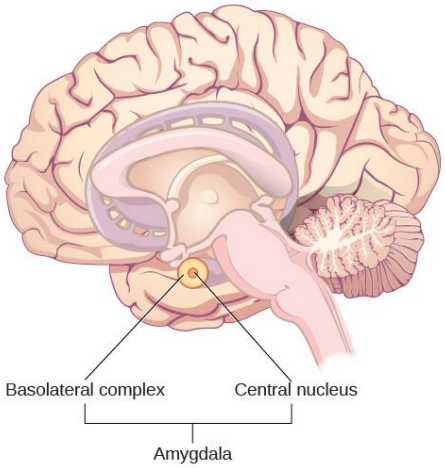
memory. The central nucleus plays a role in attention, and it has connections with the hypothalamus and various brainstem areas to regulate the autonomic nervous and endocrine systems' activity (Pessoa, 2010).

Animal research has demonstrated that there is increased activation of the amygdala in rat pups that have odor cues paired with electrical shock when their mother is absent. This leads to an aversion to the odor cue that suggests the rats learned to fear the odor cue. Interestingly, when the mother was present, the rats actually showed a preference for the odor cue despite its association with an electrical shock. This preference was associated with no increases in amygdala activation. This suggests a differential effect on the amygdala by the *context* (the presence or absence of the mother) determined whether the pups learned to fear the odor or to be attracted to it (Moriceau & Sullivan, 2006).

Raineki, Cortés, Belnoue, and Sullivan (2012) demonstrated that, in rats, negative early life experiences could alter the function of the amygdala and result in adolescent patterns of behavior that mimic human mood disorders. In this study, rat pups received either abusive or normal treatment during postnatal days 8–12. There were two forms of abusive treatment. The first form of abusive treatment had an insufficient bedding condition. The mother rat had insufficient bedding material in her cage to build a proper nest that resulted in her spending more time away from her pups trying to construct a nest and less times nursing her pups. The second form of abusive treatment had an associative learning task that involved pairing odors and an electrical stimulus in the absence of the mother, as described above. The control group was in a cage with sufficient bedding and was left undisturbed with their mothers during the same time period. The rat pups that experienced abuse were much more likely to exhibit depressive-like symptoms during adolescence when compared to controls. These depressive-like behaviors were associated with increased activation of the amygdala.



Human research also suggests a relationship between the amygdala and psychological disorders of mood or anxiety. Changes in amygdala structure and function have been demonstrated in adolescents who are either at-risk or have been diagnosed with various mood and/or anxiety disorders (Miguel-Hidalgo, 2013; Qin et al., 2013). It has also been suggested that functional differences in the amygdala could serve as a biomarker to differentiate individuals suffering from bipolar disorder from those suffering from major depressive disorder (Fournier, Keener, Almeida, Kronhaus, & Phillips, 2013).



Hippocampus

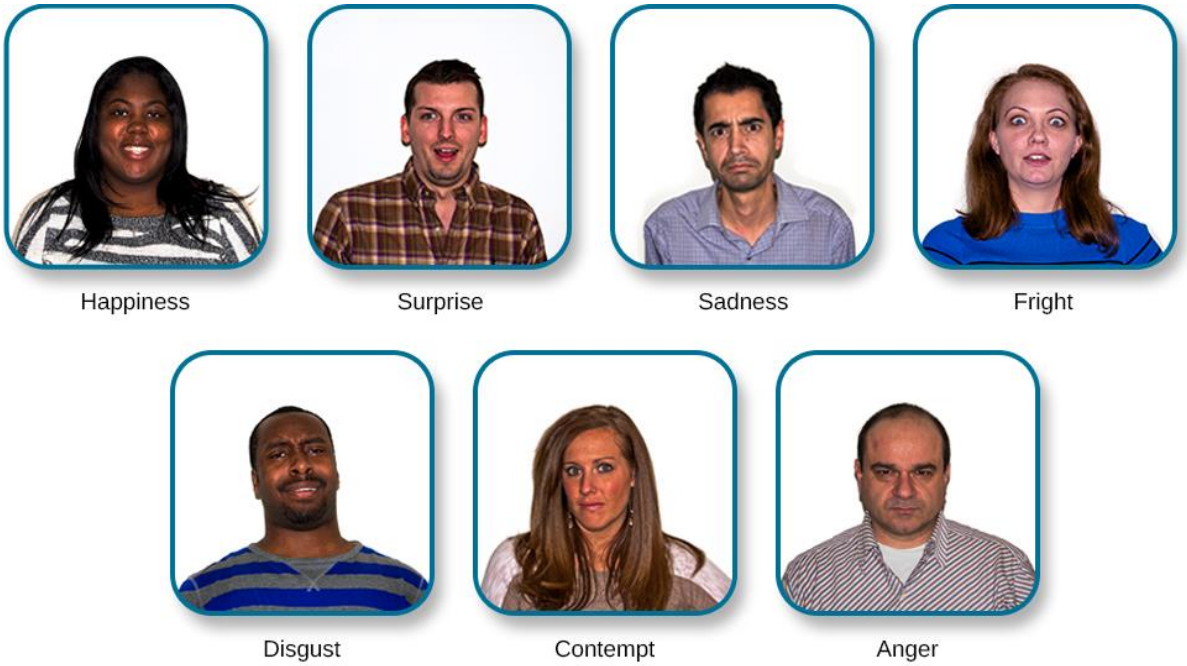
As mentioned earlier, the hippocampus is also involved in emotional processing. Like the amygdala, research has demonstrated that hippocampal structure and function are linked to a variety of mood and anxiety disorders. Individuals suffering from posttraumatic stress disorder (PTSD) show marked reductions in the volume of several parts of the hippocampus, which may result from decreased levels of neurogenesis and dendritic branching

(the generation of new neurons and the generation of new dendrites in existing neurons, respectively) (Wang et al., 2010). While it is impossible to make a causal claim with correlational research like this, studies have demonstrated behavioral improvements and hippocampal volume increases following either pharmacological or cognitive-behavioral therapy in individuals suffering from PTSD (Bremner & Vermetten, 2004; Levy-Gigi, Szabó, Kelemen, & Kéri, 2013).

FACIAL EXPRESSION AND RECOGNITION OF EMOTIONS

Culture can impact the way in which people display emotion. A cultural display rule is one of a collection of culturally specific standards that govern the types and frequencies of displays of emotions that are acceptable (Malatesta & Haviland, 1982). Therefore, people from varying cultural backgrounds can have very different cultural display rules of emotion. For example, research has shown that individuals from the United States express negative emotions like fear, anger, and disgust both alone and in the presence of others, while Japanese individuals only do so while alone (Matsumoto, 1990). Furthermore, individuals from cultures that tend to emphasize social cohesion are more likely to engage in suppression of emotional reaction so they can evaluate which response is most appropriate in a given context (Matsumoto, Yoo, & Nakagawa, 2008). Other distinct cultural characteristics might be involved in emotionality. For instance, there may be gender differences involved in emotional processing. While research into gender differences in emotional display is equivocal, there is some evidence that men and women may differ in regulation of emotions (McRae, Ochsner, Mauss, Gabrieli, & Gross, 2008).

Despite different emotional display rules, our ability to recognize and produce facial expressions of emotion appears to be universal. In fact, even congenitally blind individuals produce the same facial expression of emotions, despite their never having the opportunity to observe these facial displays of emotion in other people. This would seem to suggest that the pattern of activity in facial muscles involved in generating emotional expressions is universal, and indeed, this idea was suggested in the late 19th century in Charles Darwin's book *The Expression of Emotions in Man and Animals* (1872). In fact, there is substantial evidence for seven universal emotions that are each associated with distinct facial expressions. These include: happiness, surprise, sadness, fright, disgust, contempt, and anger (figure below) (Ekman & Keltner, 1997).



Does smiling make you happy? Or does being happy make you smile? The facial feedback hypothesis asserts that facial expressions are capable of influencing our emotions, meaning that smiling can make you feel happier (Buck, 1980; Soussignan, 2001; Strack, Martin, & Stepper, 1988). Recent research explored how Botox, which paralyzes facial muscles and limits facial expression, might affect emotion. Havas, Glenberg, Gutowski, Lucarelli, and Davidson (2010) discovered that depressed individuals reported less depression after paralysis of their frowning muscles with Botox injections. Of course, emotion is not only displayed through facial expression. We also use the tone of our voices, various behaviors, and body language to communicate information about our emotional states. Body language is the expression of emotion in terms of body position or movement. Research suggests that we are quite sensitive to the emotional information communicated through body language, even if we're not consciously aware of it (de Gelder, 2006; Tamietto et al., 2009).

AUTISM SPECTRUM DISORDER AND EXPRESSION OF EMOTIONS

Autism spectrum disorder (ASD) is a set of neurodevelopmental disorders characterized by repetitive behaviors and communication and social problems. Children who have autism spectrum disorders have difficulty recognizing the emotional states of others, and research has shown that this may stem from an inability to distinguish various nonverbal expressions of emotion (i.e., facial expressions) from one another (Hobson, 1986). In addition, there is evidence to suggest that autistic individuals also have difficulty expressing emotion through tone of voice and by producing facial expressions (Macdonald et al., 1989). Difficulties with emotional recognition and expression may contribute to the impaired social interaction and communication that characterize autism; therefore, various therapeutic approaches have been explored to address these difficulties. Various educational curricula, cognitive-behavioral therapies, and pharmacological therapies have shown some promise in helping autistic individuals process emotionally relevant information (Bauminger, 2002; Golan & Baron-Cohen, 2006; Guastella et al., 2010).

2.3 EXPRESSION OF EMOTIONS

Our bodies are hardwired to feel emotions – whether we express them or not is our choice. Feeling sadness, anger or joy are natural responses to all the events our brains process every

day. Throughout history, emotions have played a big role in human evolution. Going back millions of years, our brains developed emotions to pass along responses to certain events to help preserve the species. It's why seeing a predator naturally makes us feel fear – so we know we need to run to save our lives. Emotional expression is simply the acknowledgement of these emotions we are built to feel. Healthy expression allows us to understand the emotions, truly feel them and move on.

There are six basic emotions humans are born with that we should all be able to recognize:

- Anger
- Sadness
- Fear
- Disgust
- Surprise
- Joy

We need to have awareness of these emotions as they happen. Awareness starts with understanding how they make us feel. It is also important to recognize situations that make them happen. This helps process emotions and let them go in a healthy and productive way. For example, venting or dumping strong feelings isn't always helpful. It can actually cause more harm than we intend.

2.4 EMOTIONS AND ANS

In their book "Discovering Psychology," authors Don Hockenbury and Sandra E. Hockenbury suggest that an emotion is a complex psychological state that involves three distinct components: a subjective experience, a physiological response, and a behavioral or expressive response.

In addition to trying to define what emotions are, researchers have also tried to identify and classify the different types of emotions. The descriptions and insights have changed over time.

In 1972, psychologist Paul Ekman suggested that there are six basic emotions that are universal throughout human cultures: fear, disgust, anger, surprise, happiness, and sadness.

In the 1980s, Robert Plutchik introduced another emotion classification system known as the "wheel of emotions." This model demonstrated how different emotions can be combined or mixed together, much the way an artist mixes primary colors to create other colors.

In 1999, Ekman expanded his list to include a number of other basic emotions, including embarrassment, excitement, contempt, shame, pride, satisfaction, and amusement.
Plutchik proposed eight primary emotional dimensions: happiness vs. sadness, anger vs. fear, trust vs. disgust, and surprise vs. anticipation. These emotions can then be combined to create others (such as happiness + anticipation = excitement).

Key Elements of Emotions

In order to better understand what emotions are, let's focus on their three key elements, known as the subjective experience, the physiological response, and the behavioral response.

Subjective Experience

While experts believe that there are a number of basic universal emotions that are experienced by people all over the world regardless of background or culture, researchers also believe that experiencing emotion can be highly subjective.5 Consider anger, for example. Is all anger the same? Your own experience might range from mild annoyance to blinding rage.

While we have broad labels for emotions such as "angry," "sad," or "happy," your own experience of these emotions may be much more multi-dimensional, hence subjective.

We also don't always experience pure forms of each emotion. Mixed emotions over different events or situations in our lives are common. When faced with starting a new job, you might feel both excited and nervous. Getting married or having a child might be marked by a wide variety of emotions ranging from joy to anxiety. These emotions might occur simultaneously, or you might feel them one after another.

Physiological Response

If you've ever felt your stomach lurch from anxiety or your heart palpate with fear, then you realize that emotions also cause strong physiological reactions.

Many of the physiological responses you experience during an emotion, such as sweaty palms or a racing heartbeat, are regulated by the sympathetic nervous system, a branch of the autonomic nervous system.

The autonomic nervous system controls involuntary body responses, such as blood flow and digestion. The sympathetic nervous system is charged with controlling the body's fight-or-flight reactions. When facing a threat, these responses automatically prepare your body to flee from danger or face the threat head-on.

While early studies of the physiology of emotion tended to focus on these autonomic responses, more recent research has targeted the brain's role in emotions. Brain scans have shown that the amygdala, part of the limbic system, plays an important role in emotion and fear in particular.

The amygdala itself is a tiny, almond-shaped structure that has been linked to motivational states such as hunger and thirst as well as memory and emotion. Researchers have used brain imaging to show that when people are shown threatening images, the amygdala becomes activated. Damage to the amygdala has also been shown to impair the fear response.

Behavioral Response

The final component is perhaps one that you are most familiar with—the actual expression of emotion. We spend a significant amount of time interpreting the emotional expressions of the people around us. Our ability to accurately understand these expressions is tied to what psychologists call emotional intelligence, and these expressions play a major part in our overall body language.

Research suggests that many expressions are universal, such as a smile to indicate happiness or a frown to indicate sadness.

Sociocultural norms also play a role in how we express and interpret emotions. In Japan, for example, people tend to mask displays of fear or disgust when an authority figure is present. People in the United States are more likely to express negative emotions both alone and in the presence of others, while people in Japan are more likely to do so while alone.8

Theories of Emotion

Charles Darwin proposed the evolutionary theory of emotion, which suggests that emotions are adaptive to our environment and improve our chances of survival. For example, emotions like love are adaptive because they promote mating and reproduction. Emotions like fear keep us safe from predators.

The James-Lange theory maintains that our physical responses are responsible for emotion. If someone sneaks up on you and shouts, for instance, your heart rate increases. Your heart rate increase is what causes you to feel fear.

The facial-feedback theory elaborates on the James-Lange theory. It suggests that physical activity influences emotion—for instance, if you force a smile, you will feel happier than you would if you didn't smile at all.

The Cannon-Bard theory refutes the James-Lange theory, asserting that people experience emotional and physical responses at the same time.

The Schachter-Singer theory is a cognitive theory of emotion that suggests our thoughts are actually responsible for emotions. Similar to this theory is the cognitive appraisal theory. It posits that someone must first think before experiencing an emotion. For instance, your brain judges a situation as threatening, and as a result, you experience fear.

Types of Emotions

There are various theories as to how many types of emotions humans experience. As mentioned, psychologist Paul Ekman established the following six universal emotions:

- Happiness: Many people strive for happiness, as it is a pleasant emotion accompanied by a sense of well-being and satisfaction. Happiness is often expressed by smiling or speaking in an upbeat tone of voice.
- Sadness: All of us experience sadness now and then. Someone might express sadness by crying, being quiet, and/or withdrawing from others. Types of sadness include grief, hopelessness, and disappointment.
- Fear: Fear can increase heart rate, cause racing thoughts, or trigger the fight-or-flight response. It can be a reaction to actual or perceived threats. Some people enjoy the adrenaline rush that accompanies fear in the form of watching scary movies, riding roller coasters, or skydiving.
- Disgust: Disgust can be triggered by a physical experience, such as seeing or smelling rotting food, blood, or poor hygiene. Moral disgust may occur when someone sees another person doing something they find immoral or distasteful.
- Anger: Anger can be expressed with facial expressions like frowning, yelling, or violent behavior. Anger can motivate you to make changes in your life, but you need to find a healthy outlet to express anger so it doesn't cause harm to yourself or others.
- Surprise: Surprise can be pleasant or unpleasant. You might open your mouth or gasp when you're surprised. Surprise, like fear, can trigger the fight-or-flight response.

Emotions, Feelings, and Moods

In everyday language, people often use the terms emotions, feelings, and moods interchangeably, but these terms actually mean different things. An emotion is normally quite short-lived, but intense. Emotions are also likely to have a definite and identifiable cause. For example, after disagreeing with a friend over politics, you might experience anger.

Emotions are reactions to stimuli, but feelings are what we experience as a result of emotions. Feelings are influenced by our perception of the situation, which is why the same emotion can trigger different feelings among people experiencing it.

Your anger might feel like frustration because you feel that your friend never listens to you when you speak. Your friend's anger, on the other hand, might feel like jealousy because they feel you know much more about the topic than they do. Both of you have the same emotion, but your feelings are different based on your separate interpretations.

A mood can be described as a temporary emotional state. Sometimes moods are caused by clear reasons—you might feel everything is going your way this week, so you're in a happy mood. But in many cases, it can be difficult to identify the specific cause of a mood. For example, you might find yourself feeling gloomy for several days without any clear, identifiable reason.

If you've been struggling with low mood or difficult emotions, talk to a doctor or a mental health professional about your concerns. They can offer support, guidance, and solutions that can help you get back to feeling your best. You can see our National Helpline Database to explore different resources that might help.

2.5 BRAIN AND EMOTIONS

As we all know, emotions are complex. Psychologists say that we have only 6 basic emotions, which are happiness, anger, sadness, fear, surprise, and disgust. All of our other emotions are built from the 6 basic emotions. For example, jealousy stems from a combined feeling of anger or sadness, while satisfaction can be a type of happiness. When it comes to emotions, it turns out that there are regions in the brain, specifically in the limbic system, that are associated with each of the 6 main emotions. Emotions are actually experiences that are associated with activation of certain regions in the brain.

Emotion structures in brain

Positron Emission Tomography (PET) scanning and functional MRI studies have shown that some emotions are more likely to be associated with different regions of limbic system activity than other emotions.

a. Happiness activates several areas of the brain, including the right frontal cortex, the precuneus, the left amygdala, and the left insula. This activity involves connections between awareness (frontal cortex and insula) and the “feeling center” (amygdala) of the brain.
b. Fear activates the bilateral amygdala, the hypothalamus and areas of the left frontal cortex. This involves some thinking (frontal cortex), a “gut” feeling (amygdala), and a sense of urgency typically associated with survival (the hypothalamus.)
c. Sadness is associated with increased activity of the right occipital lobe, the left insula, the left thalamus the amygdala and the hippocampus. The hippocampus is strongly linked with memory, and it makes sense that awareness of certain memories is associated with feeling sad.
d. Sadness has been studied more than the other emotions because depression may last for a long time; the effects of antidepressants can be measured based on improved symptoms.

e. Disgust is an interesting feeling that is often associated with avoidance. This emotion that is associated with activation and connections between the left amygdala, the left inferior frontal cortex, and the insular cortex.
f. Anger is an important emotion that many people, adults and children alike, try to control. Anger is associated with activation of the right hippocampus, the amygdala, both sides of the prefrontal cortex and the insular cortex.
g. Surprise is an emotion that can either make you feel good or it can make you feel bad. Surprise activates the bilateral inferior frontal gyrus and the bilateral hippocampus. The hippocampus is strongly associated with memory, and the element of surprise is, by nature, associated with experiencing something that you do not remember or do not expect.

Where do emotions come from?
The limbic system is a group of interconnected structures located deep within the brain. It's the part of the brain that's responsible for behavioral and emotional responses.

Scientists haven't reached an agreement about the full list of structures that make up the limbic system, but the following structures are generally accepted as part of the group:

- Hypothalamus. In addition to controlling emotional responses, the hypothalamus is also involved in sexual responses, hormone release, and regulating body temperature.
- Hippocampus. The hippocampus helps preserve and retrieve memories. It also plays a role in how you understand the spatial dimensions of your environment.
- Amygdala. The amygdala helps coordinate responses to things in your environment, especially those that trigger an emotional response. This structure plays an important role in fear and anger.
- Limbic cortex. This part contains two structures, the cingulate gyrus and the parahippocampal gyrus. Together, they impact mood, motivation, and judgement.

What part of the brain controls fear?
From a biological standpoint, fear is a very important emotion. It helps you respond appropriately to threatening situations that could harm you.

This response is generated by stimulation of the amygdala, followed by the hypothalamus. This is why some people with brain damage affecting their amygdala don't always respond appropriately to dangerous scenarios.

When the amygdala stimulates the hypothalamus, it initiates the fight-or-flight response. The hypothalamus sends signals to the adrenal glands to produce hormones, such as adrenaline and cortisol.

As these hormones enter the bloodstream, you might notice some physical changes, such as an increase in:

- Heart rate
- Breathing rate
- Blood sugar
- Perspiration

In addition to initiating the fight-or-flight response, the amygdala also plays a role in fear learning. This refers to the process by which you develop an association between certain situations and feelings of fear.

What part of the brain controls anger?
Much like fear, anger is a response to threats or stressors in your environment. When you're in a situation that seems dangerous and you can't escape, you'll likely respond with anger or aggression. You can think of the anger response and the fight as part of the fight-or-flight response.

Frustration, such as facing roadblocks while trying to achieve a goal, can also trigger the anger response.

Anger starts with the amygdala stimulating the hypothalamus, much like in the fear response. In addition, parts of the prefrontal cortex may also play a role in anger. People with damage to this area often have trouble controlling their emotions, especially anger and aggression.

Parts of the prefrontal cortex of the brain may also contribute to the regulation of an anger response. People with damage to this area of the brain sometimes have difficulty Trusted Source controlling their emotions, particularly anger and aggression.

What part of the brain controls happiness?
Happiness refers to an overall state of well-being or satisfaction. When you feel happy, you generally have positive thoughts and feelings.

Imaging studies suggest that the happiness response originates partly in the limbic cortex. Another area called the precuneus also plays a role. The precuneus is involved in retrieving memories, maintaining your sense of self, and focusing your attention as you move about your environment.

A 2015 studyTrusted Source found that people with larger gray matter volume in their right precuneus reported being happier. Experts think the precuneus processes certain information and converts it into feelings of happiness. For example, imagine you've spent a wonderful night out with someone you care about. Going forward, when you recall this experience and others like it, you may experience a feeling of happiness.

What part of the brain controls love?
It may sound strange, but the beginnings of romantic love are associated with the stress response triggered by your hypothalamus. It makes more sense when you think about the nervous excitement or anxiety you feel while falling for someone.

As these feelings grow, the hypothalamus triggers release of other hormones, such as dopamine, oxytocin, and vasopressin.

Dopamine is associated with your body's reward system. This helps make love a desirable feeling.

A small 2005 study showed participants a picture of someone they were romantically in love with. Then, they showed them a photo of an acquaintance. When shown a picture of someone they loved, the participants had increased activity in parts of the brain that are rich in dopamine.

Oxytocin is often referred to as the "love hormone." This is largely because it increases when you hug someone or have an orgasm. It's produced in the hypothalamus and released through

your pituitary gland. It's associated with social bonding as well. This is important for trust and building a relationship. It can also promote a feeling of calmness and contentment.

Vasopressin is similarly produced in your hypothalamus and released by your pituitary gland. It's also involved in social bonding with a partner.

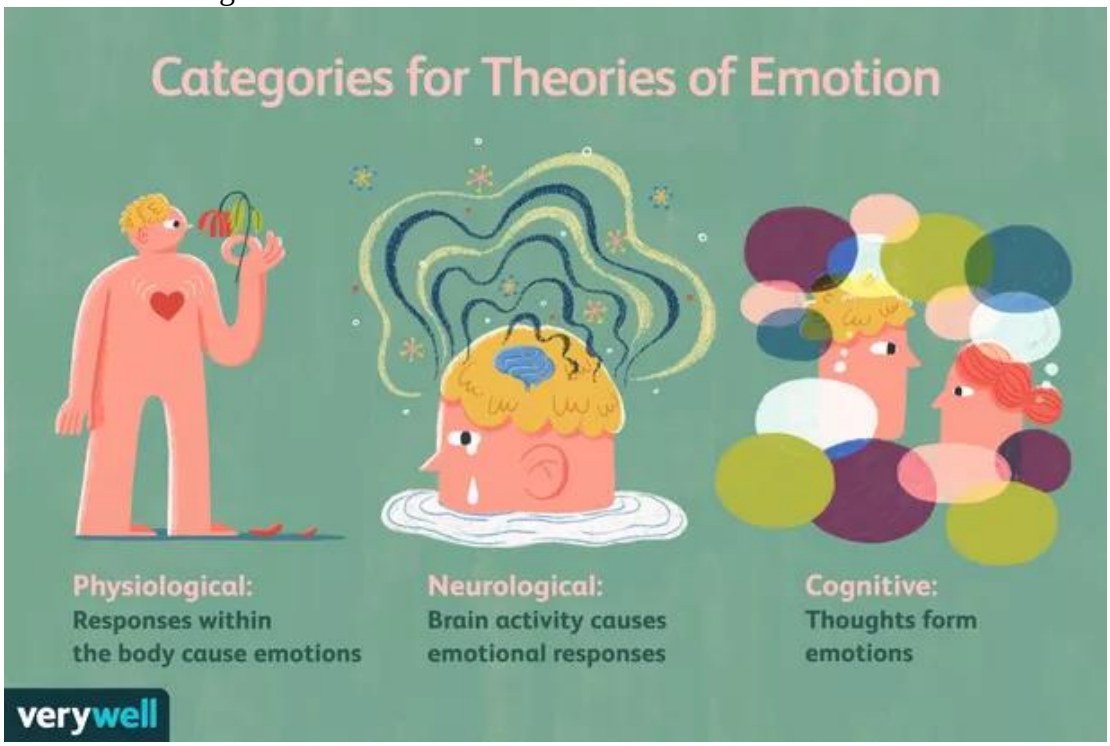
2.6 THEORIES OF EMOTIONS

Emotions exert an incredibly powerful force on human behavior. Strong emotions can cause you to take actions you might not normally perform or to avoid situations you enjoy. Why exactly do we have emotions? What causes them? Researchers, philosophers, and psychologists have proposed various theories of emotion to explain the how and why behind our feelings.

Types of Theories of Emotion

The major theories of emotion can be grouped into three main categories:

1. **Physiological theories** suggest that responses within the body are responsible for emotions.
2. **Neurological theories** propose that activity within the brain leads to emotional responses.
3. **Cognitive theories** argue that thoughts and other mental activity play an essential role in forming emotions.



Evolutionary Theory of Emotion

Naturalist Charles Darwin proposed that emotions evolved because they were adaptive and allowed humans and animals to survive and reproduce. Feelings of love and affection lead people to seek mates and reproduce. Feelings of fear compel people to fight or flee the source of danger.

According to the evolutionary theory of emotion, our emotions exist because they serve an adaptive role. Emotions motivate people to respond quickly to stimuli in the environment, which helps improve the chances of success and survival.

Understanding the emotions of other people and animals also plays a crucial role in safety and survival. If you encounter a hissing, spitting, and clawing animal, chances are you will quickly realize that the animal is frightened or defensive and leave it alone. Being able to interpret correctly the emotional displays of other people and animals allows you to respond correctly and avoid danger.

The James-Lange Theory of Emotion

The James-Lange theory is one of the best-known examples of a physiological theory of emotion. Independently proposed by psychologist William James and physiologist Carl Lange, the James-Lange theory of emotion suggests that emotions occur as a result of physiological reactions to events.

According to the James-Lange theory of emotion, an external stimulus leads to a physiological reaction. Your emotional reaction depends upon how you interpret those physical reactions.
For example, suppose you are walking in the woods and see a grizzly bear. You begin to tremble, and your heart begins to race. The James-Lange theory proposes that you will conclude that you are frightened ("I am trembling. Therefore, I am afraid"). According to this theory of emotion, you are not trembling because you are frightened. Instead, you feel frightened because you are trembling.

The Cannon-Bard Theory of Emotion

Another well-known physiological theory is the Cannon-Bard theory of emotion. Walter Cannon disagreed with the James-Lange theory of emotion on several different grounds. First, he suggested, people can experience physiological reactions linked to emotions without actually feeling those emotions. For example, your heart might race because you have been exercising, not because you are afraid.

Cannon also suggested that emotional responses occur much too quickly to be simply products of physical states. When you encounter a danger in the environment, you will often feel afraid before you start to experience the physical symptoms associated with fear, such as shaking hands, rapid breathing, and a racing heart.

According to the Cannon-Bard theory of emotion, we feel emotions and experience physiological reactions such as sweating, trembling, and muscle tension simultaneously. Cannon first proposed his theory in the 1920s, and his work was later expanded on by physiologist Philip Bard during the 1930s.

More specifically, the theory proposes that emotions result when the thalamus sends a message to the brain in response to a stimulus, resulting in a physiological reaction. At the same time, the brain also receives signals triggering the emotional experience. Cannon and Bard's theory suggests that the physical and psychological experience of emotion happen at the same time and that one does not cause the other.

Schachter-Singer Theory

Also known as the two-factor theory of emotion, the Schachter-Singer theory is an example of a cognitive theory of emotion. This theory suggests that the physiological arousal occurs first, and then the individual must identify the reason for this arousal to experience and label it as an emotion. A stimulus leads to a physiological response that is then cognitively interpreted and labeled, resulting in an emotion.

Schachter and Singer's theory draws on both the James-Lange theory and the Cannon-Bard theory. Like the James-Lange theory, the Schachter-Singer theory proposes that people infer emotions based on physiological responses. The critical factor is the situation and the cognitive interpretation that people use to label that emotion.

The Schachter-Singer theory is a cognitive theory of emotion that suggests our thoughts are responsible for emotions. Like the Cannon-Bard theory, the Schachter-Singer theory also suggests that similar physiological responses can produce varying emotions. For example, if you experience a racing heart and sweating palms during an important exam, you will probably identify the emotion as anxiety. If you experience the same physical responses on a date, you might interpret those responses as love, affection, or arousal.

Cognitive Appraisal Theory

According to appraisal theories of emotion, thinking must occur first before experiencing emotion. Richard Lazarus was a pioneer in this area of emotion, and this theory is often referred to as the Lazarus theory of emotion.

According to this theory, the sequence of events first involves a stimulus, followed by thought, which then leads to the simultaneous experience of a physiological response and the emotion. For example, if you encounter a bear in the woods, you might immediately begin to think that you are in great danger. This then leads to the emotional experience of fear and the physical reactions associated with the fight-or-flight response.

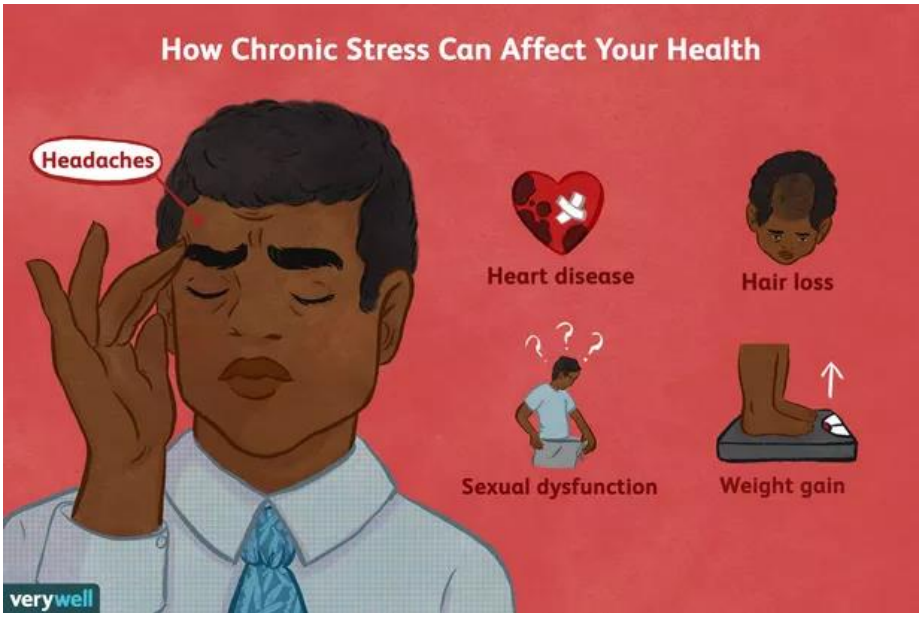
Facial-Feedback Theory of Emotion

The facial-feedback theory of emotions suggests that facial expressions are connected to experiencing emotions. Charles Darwin and William James both noted early on that, sometimes, physiological responses often have a direct impact on emotion, rather than simply being a consequence of the emotion.

The facial-feedback theory suggests that emotions are directly tied to changes in facial muscles. For example, people who are forced to smile pleasantly at a social function will have a better time at the event than they would if they had frowned or carried a more neutral facial expression.

2.7 STRESS AND STRESSORS

Stress can be defined as any type of change that causes physical, emotional, or psychological strain. Stress is your body's response to anything that requires attention or action. Everyone experiences stress to some degree. The way you respond to stress, however, makes a big difference to your overall well-being.



Sometimes, the best way to manage your stress involves changing your situation. At other times, the best strategy involves changing the way you respond to the situation. Developing a clear understanding of how stress impacts your physical and mental health is important. It's also important to recognize how your mental and physical health affects your stress level.

Signs of Stress

Stress can be short-term or long-term. Both can lead to a variety of symptoms, but chronic stress can take a serious toll on the body over time and have long-lasting health effects.

Some common signs of stress include:

- Changes in mood
- Clammy or sweaty palms
- Decreased sex drive
- Diarrhea
- Difficulty sleeping
- Digestive problems
- Dizziness
- Feeling anxious
- Frequent sickness
- Grinding teeth
- Headaches
- Low energy
- Muscle tension, especially in the neck and shoulders
- Physical aches and pains
- Racing heartbeat
- Trembling

Identifying Stress

What does stress feel like? What does stress feel like? It often contributes to irritability, fear, overwork, and frustration. You may feel physically exhausted, worn out, and unable to cope.

Stress is not always easy to recognize, but there are some ways to identify some signs that you might be experiencing too much pressure. Sometimes stress can come from an obvious source,

but sometimes even small daily stresses from work, school, family, and friends can take a toll on your mind and body.

If you think stress might be affecting you, there are a few things you can watch for:

- Psychological signs such as difficulty concentrating, worrying, anxiety, and trouble remembering
- Emotional signs such as being angry, irritated, moody, or frustrated
- Physical signs such as high blood pressure, changes in weight, frequent colds or infections, and changes in the menstrual cycle and libido
- Behavioral signs such as poor self-care, not having time for the things you enjoy, or relying on drugs and alcohol to cope
- Stress vs. Anxiety
- Stress can sometimes be mistaken for anxiety, and experiencing a great deal of stress can contribute to feelings of anxiety. Experiencing anxiety can make it more difficult to cope with stress and may contribute to other health issues, including increased depression, susceptibility to illness, and digestive problems.

Stress and anxiety contribute to nervousness, poor sleep, high blood pressure, muscle tension, and excess worry. In most cases, stress is caused by external events, while anxiety is caused by your internal reaction to stress. Stress may go away once the threat or the situation resolves, whereas anxiety may persist even after the original stressor is gone.2

Causes of Stress

There are many different things in life that can cause stress. Some of the main sources of stress include work, finances, relationships, parenting, and day-to-day inconveniences.

Stress can trigger the body's response to a perceived threat or danger, known as the fight-or-flight response.3 During this reaction, certain hormones like adrenaline and cortisol are released. This speeds the heart rate, slows digestion, shunts blood flow to major muscle groups, and changes various other autonomic nervous functions, giving the body a burst of energy and strength.

Originally named for its ability to enable us to physically fight or run away when faced with danger, the fight-or-flight response is now activated in situations where neither response is appropriate—like in traffic or during a stressful day at work.

When the perceived threat is gone, systems are designed to return to normal function via the relaxation response.4 But in cases of chronic stress, the relaxation response doesn't occur often enough, and being in a near-constant state of fight-or-flight can cause damage to the body.

Stress can also lead to some unhealthy habits that have a negative impact on your health. For example, many people cope with stress by eating too much or by smoking. These unhealthy habits damage the body and create bigger problems in the long-term.5

On May 19, 2022, Verywell Mind hosted a virtual Mental Health in the Workplace webinar, hosted by Editor-in-Chief Amy Morin, LCSW. If you missed it, check out this recap to learn ways to foster supportive work environments and helpful strategies to improve your well-being on the job.

Types of Stress

Not all types of stress are harmful or even negative. Some of the different types of stress that you might experience include:

- Acute stress: Acute stress is a very short-term type of stress that can either be positive or more distressing; this is the type of stress we most often encounter in day-to-day life.
- Chronic stress: Chronic stress is stress that seems never-ending and inescapable, like the stress of a bad marriage or an extremely taxing job; chronic stress can also stem from traumatic experiences and childhood trauma.
- Episodic acute stress: Episodic acute stress is acute stress that seems to run rampant and be a way of life, creating a life of ongoing distress.
- Eustress: Eustress is fun and exciting. It's known as a positive type of stress that can keep you energized. It's associated with surges of adrenaline, such as when you are skiing or racing to meet a deadline.

The three main types of negative stress are acute stress, chronic stress, and episodic acute stress. Positive stress, known as eustress, can be fun and exciting, but it can also take a toll.

Impact of Stress

Stress can have several effects on your health and well-being. It can make it more challenging to deal with life's daily hassles, affect your interpersonal relationships, and have detrimental effects on your health. The connection between your mind and body is apparent when you examine stress's impact on your life.

Feeling stressed over a relationship, money, or living situation can create physical health issues. The inverse is also true. Health problems, whether you're dealing with high blood pressure or diabetes, will also affect your stress level and mental health. When your brain experiences high degrees of stress, your body reacts accordingly.

Serious acute stress, like being involved in a natural disaster or getting into a verbal altercation, can trigger heart attacks, arrhythmias, and even sudden death. However, this happens mostly in individuals who already have heart disease.6

Stress also takes an emotional toll. While some stress may produce feelings of mild anxiety or frustration, prolonged stress can also lead to burnout, anxiety disorders, and depression.

Chronic stress can have a serious impact on your health as well. If you experience chronic stress, your autonomic nervous system will be overactive, which is likely to damage your body.

Stress-Influenced Conditions

- Diabetes
- Hair loss
- Heart disease
- Hyperthyroidism
- Obesity
- Sexual dysfunction
- Tooth and gum disease
- Ulcers

Treatments for Stress

Stress is not a distinct medical diagnosis and there is no single, specific treatment for it. Treatment for stress focuses on changing the situation, developing stress coping skills, implementing relaxation techniques, and treating symptoms or conditions that may have been caused by chronic stress.

Some interventions that may be helpful include therapy, medication, and complementary and alternative medicine (CAM).

Psychotherapy
Some forms of therapy that may be particularly helpful in addressing symptoms of stress including cognitive behavioral therapy (CBT) and mindfulness-based stress reduction (MBSR). CBT focuses on helping people identify and change negative thinking patterns, while MBSR utilizes meditation and mindfulness to help reduce stress levels.

Medication
Medication may sometimes be prescribed to address some specific symptoms that are related to stress. Such medications may include sleep aids, antacids, antidepressants, and anti-anxiety medications.

Complementary and Alternative Medicine
Some complementary approaches that may also be helpful for reducing stress include acupuncture, aromatherapy, massage, yoga, and meditation.

Coping With Stress
Although stress is inevitable, it can be manageable. When you understand the toll it takes on you and the steps to combat stress, you can take charge of your health and reduce the impact stress has on your life.

Learn to recognize the signs of burnout. High levels of stress may place you at a high risk of burnout. Burnout can leave you feeling exhausted and apathetic about your job.7 When you start to feel symptoms of emotional exhaustion, it's a sign that you need to find a way to get a handle on your stress.

Try to get regular exercise. Physical activity has a big impact on your brain and your body. Whether you enjoy Tai Chi or you want to begin jogging, exercise reduces stress and improves many symptoms associated with mental illness.

Take care of yourself. Incorporating regular self-care activities into your daily life is essential to stress management. Learn how to take care of your mind, body, and spirit and discover how to equip yourself to live your best life.

Practice mindfulness in your life. Mindfulness isn't just something you practice for 10 minutes each day. It can also be a way of life. Discover how to live more mindfully throughout your day so you can become more awake and conscious throughout your life.

2.8 COPING STYLES

Coping is defined as the thoughts and behaviors mobilized to manage internal and external stressful situations. It is a term used distinctively for conscious and voluntary mobilization of acts, different from 'defense mechanisms' that are subconscious or unconscious adaptive responses, both of which aim to reduce or tolerate stress.

When individuals are subjected to a stressor, the varying ways of dealing with it are termed 'coping styles,' which are a set of relatively stable traits that determine the individual's behavior in response to stress. These are consistent over time and across situations. Generally, coping is divided into reactive coping (a reaction following the stressor) and proactive coping (aiming to neutralize future stressors). Proactive individuals excel in stable environments because they are more routinized, rigid, and are less reactive to stressors, while reactive individuals perform better in a more variable environment.

Coping scales measure the type of coping mechanism a person exhibits. The most commonly used scales are COPE (Coping Orientation to Problems Experienced), Ways of Coping Questionnaire, Coping Strategies Questionnaire, Coping Inventory for Stressful Situations, Religious-COPE, and Coping Response Inventory.

- Problem-focused, which addresses the problem causing the distress: Examples of this style include active coping, planning, restraint coping, and suppression of competing activities.
- Emotion-focused, which aims to reduce the negative emotions associated with the problem: Examples of this style include positive reframing, acceptance, turning to religion, and humor.
- Meaning-focused, in which an individual uses cognitive strategies to derive and manage the meaning of the situation
- Social coping (support-seeking) in which an individual reduces stress by seeking emotional or instrumental support from their community.

Many of the coping mechanisms prove useful in certain situations. Some studies suggest that a problem-focused approach can be the most beneficial; other studies have consistent data that some coping mechanisms are associated with worse outcomes. Maladaptive coping refers to coping mechanisms that are associated with poor mental health outcomes and higher levels of psychopathology symptoms. These include disengagement, avoidance, and emotional suppression.

The physiology behind different coping styles is related to the serotonergic and dopaminergic input of the medial prefrontal cortex and the nucleus accumbens. The neuropeptides vasopressin and oxytocin also have an important implication relative to coping styles. On the other hand, neuroendocrinology involving the level of activity of the hypothalamic-pituitary-adrenocortical axis, corticosteroids, and plasma catecholamines were unlikely to have a direct causal relationship with an individual's coping style.

Issues of Concern

Patients using maladaptive coping mechanisms are more likely to engage in health-risk behaviors than those with appropriate mechanisms. They are also more non-adherent and more likely to use cigarettes or alcohol.

Coping influences patients' compliance to therapy and the course of the disease by lifestyle changes. In disorders where non-medicinal treatment plays a role in the progression, coping mechanisms are important in determining the severity of such conditions. Coping styles may be helpful in patients' educational programs or psychotherapy and paying attention to them could contribute to the prevention of sequelae.

The importance of coping styles does not only affect the patients alone but also their physicians and nurses. Healthcare workers are more likely to choose a problem-oriented coping mechanism while the tendency to choose avoidance decreases with age and employment duration. The incidence of burnout syndrome decreases with the use of problem-oriented coping mechanisms, social integration, and the use of religion.

Clinical Significance

Understanding coping mechanisms is a cornerstone in choosing the best approach to the patient to build an effective doctor-patient relationship. The need to monitor the patient's level of distress and coping mechanisms arise because patients who adopt maladaptive mechanisms are more likely to perceive their doctors as being disengaged and less supportive. This perception is clinically significant because about one out of four cancer patients use a maladaptive coping mechanism.

The relation between maladaptive coping mechanisms and numerous disorders has been established. Psychiatric disorders such as PTSD, anxiety, and major depression, and somatic symptoms were all correlated with coping styles related to avoidance. This scenario holds for other disorders such as hypertension and heart diseases, where maladaptive coping strategies were used by patients who had more severe symptoms.

Nursing, Allied Health, and Interprofessional Team Interventions

Teaching patients and their caregivers appropriate coping skills can have a significant impact on the way they perceive their condition, the severity of the symptoms, and the psychological distress associated with it. In patients diagnosed with lung cancer, assertive communication was associated with less pain interference and psychological distress; coping skills effects extend to family caregivers who reported less psychological distress when practicing guided imagery. Other coping mechanisms as mindfulness might not be as beneficial in certain situations.

Physicians, psychiatrists, physical therapists, nurses, and health educators share the role of educating patients to become more responsible for their health. Interprofessional involvement can help patients cope better with the symptoms of their illnesses. Coping skills training programs didn't prove to be effective in reducing pain severity among knee osteoarthritis patients. They did not confer pain or functional benefit beyond that with surgical and postoperative care, but combining both physical exercises and coping skills training with treatment had a more significant improvement.

Nursing, Allied Health, and Interprofessional Team Monitoring

Understanding the coping styles is central to support the patient's coping efforts. Talking with the medical staff to seek information and social support was the most popular coping strategy in anxious surgical patients. Monitoring patients' coping strategies using various coping scales (e.g., COPE, Ways of Coping Questionnaire, Coping Strategies Questionnaire) can help in evaluating the patient's psychological status and continued improvement.

2.9 CHAPTER SUMMARY

Everyone experiences stress to some degree. The way you respond to stress, however, makes a big difference to your overall well-being. Sometimes, the best way to manage your stress involves changing your situation. At other times, the best strategy involves changing the way you respond to the situation. Developing a clear understanding of how stress impacts your physical and mental health is important. It's also important to recognize how your mental and

physical health affects your stress level. As we move through our daily lives, we experience a variety of emotions. An emotion is a subjective state of being that we often describe as our feelings. The words emotion and mood are sometimes used interchangeably, but psychologists use these words to refer to two different things. Typically, the word emotion indicates a subjective, affective state that is relatively intense and that occurs in response to something we experience (figure below). 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 (Beedie, Terry, Lane, & Devonport, 2011). Here we will focus on emotion, and you will learn more about mood in the chapter that covers psychological disorders. Stress can be defined as any type of change that causes physical, emotional, or psychological strain. Stress is your body's response to anything that requires attention or action. Everyone experiences stress to some degree. The way you respond to stress, however, makes a big difference to your overall well-being. Coping is defined as the thoughts and behaviors mobilized to manage internal and external stressful situations. It is a term used distinctively for conscious and voluntary mobilization of acts, different from 'defense mechanisms' that are subconscious or unconscious adaptive responses, both of which aim to reduce or tolerate stress.

2.10 REVIEW QUESTIONS

SHORT ANSWER TYPE QUESTIONS

1. What are the primary emotions?
2. What are negative emotions?
3. What are some ways emotions affecting your health?
4. What are secondary emotions?
5. How do emotions emerge?

LONG ANSWER TYPE QUESTIONS

1. Discuss the theory of emotion as put forward by James and Lange.
2. How is the theory explained in terms of physiological aspects?
3. In what way Cannon Bard's theory differs from that of James Lange theory?
4. What are the common aspects in the above two theories?
5. What are social theories of emotions?

2.11 MULTIPLE CHOICE QUESTIONS

1. **According to the _____ theory of emotion, emotional experiences arise from physiological arousal.**
   a. James-Lange
   b. Darwinian
   c. Cannon-Bard
   d. Schachter-Singer two-factor

2. **Which of the following theories of emotion would suggest that polygraphs should be quite accurate at differentiating one emotion from another?**
   a. Darwinian theory
   b. Schachter-Singer two-factor theory
   c. Cannon-Bard theory
   d. James-Lange theory

3. **According to the _____ theory of emotion, emotional experiences arise from physiological arousal.**

a. James-Lange
b. Darwinian
c. Cannon-Bard
d. Schachter-Singer two-factor

4. **You feel your heart pounding and experience surprise at the same time. This is an example of the _____ theory of emotion.**
   a. James-Lange
   b. Cannon-Bard
   c. Schachter-Singer
   d. Darwin

5. **You feel your heart pounding when someone cuts you off on the freeway. You interpret the arousal as anger. This fits the ideas behind the _____ of emotion.**
   a. Cannon-Bard
   b. Darwin
   c. James-Lange
   d. Schachter-Singer

6. **The term Health psychology has been acknowledged formally since.....**
   a. 1978
   b. 1987
   c. 1947
   d. 2000

7. **____ is a negative emotional experienced accompanied by biological cognitive and behavioral**
   a. Hope
   b. Excitement
   c. Stress
   d. Response bias

8. **'Who has given General Adaptation Syndrome?**
   a. Shelly
   b. Watson
   c. Wundt
   d. Freud

9. **Who has given fight or flight response concept?**
   a. Baron
   b. Taylor
   c. Wundht
   d. Canon

10. **What are the effects of long term stress?**
    a. Increased blood pressure
    b. Suppression of immunity
    c. All
    d. Weight gain

UNIT III
PSYCHOLOGICAL TESTS

STRUCTURE

3.1 Learning Objective
3.2 Introduction
3.3 Types of Tests
3.4 Characteristics of a Good Test
3.5 Assessing Intelligence -Stanford Binet scale, Wechsler Tests
3.6 Chapter Summary
3.7 Review Questions
3.8 Multiple Choice Questions

3.1 LEARNING OBJECTIVE

After reading this unit, you will be able to:

- Define aptitude.
- Know the characteristic features of aptitude.
- Differentiate aptitude from intelligence, achievement and interest.
- Know about some of the widely used aptitude tests.
- Describe the uses, advantages and limitations of aptitude tests.

3.2 INTRODUCTION

Psychological testing, also called psychometrics, the systematic use of tests to quantify psychophysical behaviour, abilities, and problems and to make predictions about psychological performance. The word “test” refers to any means (often formally contrived) used to elicit responses to which human behaviour in other contexts can be related. When intended to predict relatively distant future behaviour (e.g., success in school), such a device is called an aptitude test. When used to evaluate the individual’s present academic or vocational skill, it may be called an achievement test. In such settings as guidance offices, mental-health clinics, and psychiatric hospitals, tests of ability and personality may be helpful in the diagnosis and detection of troublesome behaviour. Industry and government alike have been prodigious users of tests for selecting workers. Research workers often rely on tests to translate theoretical concepts (e.g., intelligence) into experimentally useful measures.

3.3 TYPES OF TESTS

Psychological tests are classified into several types, including intelligence tests, aptitude tests, vocational tests, aptitude tests, and personality tests. Psychological testing is primarily used for psychological diagnosis, job screening, academic placements, identifying specific behaviour, research purposes, etc. Psychological tests can be classified based on their nature or function. Intelligence tests are used to assess intelligence, or your ability to perceive your surroundings, interact with them, and learn from them.

Intelligence tests include the following:

- Adult Intelligence Scale (Wachsler) (WAIS)
- Children's Wechsler Intelligence Scale (WISC)
- Intelligence Scale of Stanford-Binet (SB)

Personality tests are used to assess personality traits and styles. Personality tests are frequently used in research and to aid in clinical diagnosis. Personality tests include the following:

Thematic Apperception Test (T.A.T.) Rorschach, also known as the 'inkblot test' Minnesota Multiphasic Personality Inventory (MMPI)

Attitude tests, such as the Likert Scale or the Thurstone Scale, assess how a person feels about a specific event, location, person, or object.

Achievement tests assess how well you understand a specific subject (i.e., mathematics achievement tests). Aptitude tests assess your abilities in a particular area (i.e. clerical skills).

Achievement tests include the following:
Wechsler Individual Achievement Test (WIAT)

Aptitude tests such as the Peabody Individual Achievement Test (PIAT) include:

- Armed Services Vocational Aptitude Battery (ASVAB)
- Bloomberg Aptitude Test (B.A.T.)

What is psychological test?
Psychological tests are verbal or written assessments designed to assess a person's behaviour. Many different types of psychological tests are available to help people understand the various dynamics of human beings. It explains why one person excels at one thing while another excels at another. On the other hand, humans are complex beings that cannot be defined and classified into specific branches. The subjective nature of humans and individual differences have frequently been criticised in psychological testing.

Psychological tests allow for the formally and accurately measurement of various factors contributing to people's problems. Before administering a psychological test, the individual being tested is usually interviewed. Furthermore, more than one psychological test may be administered in some situations.

It should be noted that not everyone can administer a psychological test. Each test has its own set of requirements that must be met by a qualified professional before a person can purchase and administer the test to someone else.

Personality Tests	Factor Questionnaire (16-11F), Basic Personality Inventory (BPI), Thematic Apperception Test (TAT), Rorschach Test
Achievement Tests	Kaufman Test of EducWon Achievement (K-TEA), Wechsler Individual Assessment Test, Woodcock-Johnson Psychoeduca Battery (Achievement)
Attitude Tests	Likert Scale, Thurstone Scale, etc,
Aptitude Tests	Abstract Reasoning Test, Visual Reasoning Test, etc.
Emotional Intelligence Tests	Emotional and Social Competence Inventory, Mayer-Salovey-Caruso Ei Test (MSCEIT), etc.

Intelligence Tests	Wechsler Individual Achievement Test, Wechsler Adult Intelligence Scale, Universal Nonverbal Intelligence
Neuropsychological Tests	Ammons Quick Test, Beck Depression Inventory Anxiety Inventory, and Hopelessness Scale
Projective Tests	Rorschach Inkblot Test, Thematic Apperception Test (TAT), Draw-A-Person Test,House-Tree-person Test.
Observation (Direct) Tests	Direct Observation

3.4 CHARACTERISTICS OF A GOOD TEST

The following are the five main characteristics of a good psychological test:

- **Objectivity:** These tests must be free of subjective judgments about the ability, skill, knowledge, trait, or potentiality being measured and evaluated.
- **Reliability** refers to how consistent or reliable the results obtained are.
- **Validity** refers to how well a test measures what it is supposed to measure. For example, when developing an intelligence test to assess the level of intelligence, it should only assess the person's intelligence and not other factors. The validity of a test tells us whether it achieves the goal for which it was created. There are numerous methods for determining the validity of a test.
- **Norms:** The average performance of a representative sample on a given test is referred to as a norm. It depicts the average standard of a specific sample in a specific aspect. The standard scores developed by the person who develops the test are referred to as norms. Future test takers can compare their results to norms to determine the level of their sample.
- **Practicability:** The test must be practicable in terms of the time required to complete it, the length, the number of items or questions, the scoring, and so on. The test should not be too long or difficult to answer or score.

3.5 ASSESSING INTELLIGENCE -STANFORD BINET SCALE, WECHSLER TESTS

Measurement of Intelligence

One of the oldest and most useful of the tests of behavior is that which is intended to measure and predict the intellectual capacity of man. The test of intelligence hold a very practical origin in selecting grade school children who would profit from different training. Intelligence tests are useful for assessing differences among adults. The intelligence test has been analyzed for its contribution to the understanding of various performance differences among the men.

From the beginning of intelligence testing there have been two parallel trends, one towards performance tests and other towards verbal test-tests in which the instructions are given in words and in which a good deal of the performance is in the farm of words. Performance tests can be given to people who do not know the language or who have not been to school. They are often blind. People with poor vision and hearing or to children whose handicap seem more severe in verbal than in other areas.

Binet Test of General Intelligence:

He noted that the intellectual capacity increase with age, the intelligent person would be less susceptible to distraction, more like to adopt the situation to achieve a goal and likely to criticize his own work.

Mental Maturity:
If you give a child same test twice with enough time between two tests, you will find that his scores would improve as he grew older. He would certainly do better at the age of 18th than at the age of 4 years. However, a time would come when his ability to answer the test questions would no longer improve. A person does not stop learning even he reaches to mental maturity. Generally mental maturity reached some where between 14 to 18th age. The generally accepted figure is 15th year.

Mental Age:
It is a degree of intelligence exhibited by an individual in relation to other of his age group. Binet and Simson have development a scale called as mental age scale for measuring brightness and dullness among the individuals.

Binet testing of school children classified individuals into levels of mental development, which is called as mental age. (M.A.) Binet and Simson scale was applied as follows- A child who passes all the eight-year-old test is regarded as 8 year old mentally, however his actual age (chronological age) may be 6 year. So he is mentally 2 years in advance. Another child with mental age of 8 may be 11 years old means in this case he is retarded in three years. So brightness or dullness in terms of number of years, advance of retardation.

Intelligence Quotient (I.Q.):
William Sterm says that you can get a number that would show how intelligent a person. This is by dividing his mental age by his chronological age. The I.Q. is obtained by dividing mental age by chronological age and multiplying by 100. Formula of I.Q. is

$$\text{Intelligent Quotient} = \frac{\text{Mental Age}}{\text{Chronological Age}} \times 100$$

$$= \frac{\text{M. A.}}{\text{C. A.}} \times 100$$

The concept of mental maturity raises an interesting problem. Ex. Think of 15 years old with a mental age of 15. Clearly, his I.Q. is 100 or his mental age is still presumable 15 year. Therefore his I.Q. sunk from 100 to 75 I.Q. we must take the denominator age as 15. For avoiding these difficulties Wechsler-Bellevue adult Intelligence scale is used. Here final score is not calculated from mental age values of the tests passed by the person being examine, but from the total number of points made by him on all tests.

Wechsler Tests
The Wechsler adult intelligence scale (WAIS) is an individually administered measure of intelligence, intended for adults aged 16–89.

Purpose

The WAIS is intended to measure human intelligence reflected in both verbal and performance abilities. Dr. David Wechsler, a clinical psychologist , believed that intelligence is a global construct, reflecting a variety of measurable skills and should be considered in the context of the overall personality. The WAIS is also administered as part of a test battery to make inferences about personality and pathology, both through the content of specific answers and patterns of subtest scores.

Besides being utilized as an intelligence assessment, the WAIS is used in neuropsychological evaluation, specifically with regard to brain dysfunction. Large differences in verbal and nonverbal intelligence may indicate specific types of brain damage.

The WAIS is also administered for diagnostic purposes. Intelligence quotient (IQ) scores reported by the WAIS can be used as part of the diagnostic criteria for mental retardation , specific learning disabilities, and attention-deficit/hyperactivity disorder (ADHD).

Precautions

The Wechsler intelligence scales are not considered adequate measures of extremely high and low intelligence (IQ scores below 40 and above 160). The nature of the scoring process does not allow for scores outside of this range for test takers at particular ages. Wechsler himself was even more conservative, stressing that his scales were not appropriate for people with an IQ below 70 or above 130. Also, when administering the WAIS to people at extreme ends of the age range (below 20 years of age or above 70), caution should be used when interpreting scores. The age range for the WAIS overlaps with that of the Wechsler intelligence scale for children (WISC) for people between 16 and 17 years of age, and it is suggested that the WISC provides a better measure for this age range.

Administration and scoring of the WAIS require an active test administrator who must interact with the test taker and must know test protocol and specifications. WAIS administrators must receive proper training and be aware of all test guidelines.

Description

The Wechsler intelligence tests , which include the WAIS, the WISC, and the WPPSI (Wechsler preschool and primary scale of intelligence), are the most widely used intelligence assessments and among the most widely used neuropsychological assessments. Wechsler published the first version of the WAIS in 1939, initially called the Wechsler-Bellevue. The newest version is the WAIS-III (the third edition, most recently updated in 1997). Since Wechsler's death in 1981, the Wechsler tests have been revised by the publisher, the Psychological Corporation.

The theoretical basis for the WAIS and the other Wechlser scales came from Wechsler's belief that intelligence is a complex ability involving a variety of skills. Because intelligence is multifaceted, Wechsler believed, a test measuring intelligence must reflect this multitude of skills. After dividing intelligence into two major types of skills—verbal and performance—Wechsler utilized the statistical technique of factor analysis to determine specific skills within these two major domains. These more specific factors formed the basis of the Wechsler subtests.

The WAIS-III consists of 14 subtests and takes about 60–75 minutes to complete. The test is taken individually, with a test administrator present to give instructions. Each subtest is given separately, and proceeds from very easy items to very difficult ones. There is some flexibility

in the administration of the WAIS—the administrator may end some subtests early if test takers seem to reach the limit of their capacity. Tasks on the WAIS include questions of general knowledge, traditional arithmetic problems, a test of vocabulary, completion of pictures with missing elements, arrangements of blocks and pictures, and assembly of objects.

The WAIS is considered to be a valid and reliable measure of general intelligence. When undergoing reliability and validity studies, other intelligence tests are often compared to the Wechsler scales. It is regularly used by researchers in many areas of psychology as a measure of intelligence. Research has demonstrated correlations between WAIS IQ scores and a variety of socioeconomic, physiological, and environmental characteristics.

The WAIS has also been found to be a good measure of both fluid and crystallized intelligence. Fluid intelligence refers to inductive and deductive reasoning, skills considered to be largely influenced by neurological and biological factors. In the WAIS, fluid intelligence is reflected in the performance subtests. Crystallized intelligence refers to knowledge and skills that are primarily influenced by environmental and sociocultural factors. In the WAIS, crystallized intelligence is reflected in the verbal subtests. Wechsler himself did not necessarily divide overall intelligence into these two types. However, the consideration of fluid and crystallized intelligence as two major categories of cognitive ability has been a focus for many intelligence theorists.

The Wechshler scales were originally developed and later revised using standardization samples. The samples were meant to be demographically representative of the United States population at the time of the standardization.

Results

The WAIS elicits three intelligence quotient scores, based on an average of 100, as well as subtest and index scores. WAIS subtests measure specific verbal abilities and specific performance abilities.

The WAIS elicits an overall intelligence quotient, called the full-scale IQ, as well as a verbal IQ and a performance IQ. The three IQ scores are standardized in such a way that the scores have a mean of 100 and a standard deviation of 15. Wechsler pioneered the use of deviation IQ scores, allowing test takers to be compared to others of different as well as the same age. WAIS scores are sometimes converted into percentile ranks. The verbal and performance IQ scores are based on scores on the 14 subtests. The 14 subtest scores have a mean of 10 and a standard deviation of three. The WAIS also elicits four indices, each based on a different set of subtests: verbal comprehension, perceptual organization, working memory, and processing speed.

The full-scale IQ is based on scores on all of the subtests and is a reflection of both verbal IQ and performance IQ. It is considered the single most reliable and valid score elicited by the WAIS. However, when an examinee's verbal and performance IQ scores differ significantly, the full-scale IQ should be interpreted cautiously.

The verbal IQ

The verbal IQ is derived from scores on seven of the subtests: information, digit span, vocabulary, arithmetic, comprehension, similarities, and letter-number sequencing. Letter-number sequencing is a new subtest added to the most recent edition of the WAIS (WAIS-III).

The information subtest is a test of general knowledge, including questions about geography and literature. The digit span subtest requires test takers to repeat strings of digits. The vocabulary and arithmetic subtests are general measures of a person's vocabulary and arithmetic skills. The comprehension subtest requires test takers to solve practical problems and

KEY TERMS

Factor Analysis —A statistical method for summarizing relationships between variables. With the WAIS, items that correlated highly with each other were considered to be part of certain factors underlying intelligence. These factors are the basis for the 14 WAIS subtests.

Indices —Scores based on performance in more than one area. On the WAIS, there are four index scores, each based on an individual's performance in more than one subtest.

Mean —The mathematical average of all scores in a set of scores. The WAIS has been standardized to have a mean of 100.

Percentile rank —The point at which a given percentage of people fall at or below the individual's test score being calculated. For example, if a person's test score was at the 60th percentile, 40% of other test takers received a higher score, while 60% received a score that was at or below that of the test taker.

Standard deviation —A measure of variability in a set of scores. The WAIS has been standardized to have a standard deviation of 15.

Standardization —The administration of a test to a sample group of people for the purpose of establishing scoring norms. Prior to the publication of each version of the WAIS, it is standardized.

Explain the meaning of proverbs. The similarities subtest requires test takers to indicate the similarities between pairs of things. The letter-number sequencing subtest involves ordering numbers and letters presented in an unordered sequence. Scores on the verbal subtests are based primarily on correct answers.

The performance IQ

The performance IQ is derived from scores on the remaining seven subtests: picture completion, picture arrangement, block design, object assembly, digit symbol, matrix reasoning, and symbol search. Matrix reasoning and symbol search are new subtests and were added to the most recent edition of the WAIS (WAIS-III).

In the picture completion subtest, the test taker is required to complete pictures with missing elements. The picture arrangement subtest entails arranging pictures in order to tell a story. The block design subtest requires test takers to use blocks to make specific designs. The object assembly subtest requires people to assemble pieces in such a way that a whole object is built. In the digit symbol subtest, digits and symbols are presented as pairs and test takers then must pair additional digits and symbols. The matrix reasoning subtest requires test takers to identify geometric shapes. The symbol search subtest requires examinees to match symbols appearing in different groups. Scores on the performance subtests are based on both response speed and correct answers.

3.6 CHAPTER SUMMARY

Psychological testing, also called psychometrics, the systematic use of tests to quantify psychophysical behaviour, abilities, and problems and to make predictions about psychological performance. The word "test" refers to any means (often formally contrived) used to elicit responses to which human behaviour in other contexts can be related. When intended to predict relatively distant future behaviour (e.g., success in school), such a device is called an aptitude test. When used to evaluate the individual's present academic or vocational skill, it may be called an achievement test. In such settings as guidance offices, mental-health clinics, and psychiatric hospitals, tests of ability and personality may be helpful in the diagnosis and detection of troublesome behaviour. Industry and government alike have been prodigious users of tests for selecting workers. Research workers often rely on tests to translate theoretical concepts (e.g., intelligence) into experimentally useful measures. Psychological tests are verbal or written assessments designed to assess a person's behaviour. Many different types of psychological tests are available to help people understand the various dynamics of human beings. It explains why one person excels at one thing while another excels at another. On the other hand, humans are complex beings that cannot be defined and classified into specific branches. The subjective nature of humans and individual differences have frequently been criticised in psychological testing.

3.7 REVIEW QUESTIONS

SHORT ANSWER TYPE QUESTIONS

1. Define aptitude.
2. Explain the verbal IQ.
3. Explain characteristics of good tests.
4. Discuss IQ with a short note.
5. How many subtests are there in the DAT?

LONG ANSWER TYPE QUESTIONS

1. Which test is considered as a paper-and pencil equivalent of the Wechsler Adult Intelligence scale – Revised?
2. Name some aptitude tests that are used for admission into graduate courses.
3. Define Stanford Binet Scale. Discuss.
4. Compare aptitude with intelligence, achievement and interest.
5. Discuss the advantages and limitations of aptitude tests.

3.8 MULTIPLE CHOICE QUESTIONS

1. A psychological test is .....

a. A measure of personality
b. An objective procedure for sampling and quantifying human behaviour
c. None of the above
d. Null

2. Who developed the first individual test of intelligence?

a. Sigmund Frued
b. William James
c. Alfred Bine
d. Null

3. Which among the following is included in the definition of personality psychology?

a. It deals with adaptations to the environment
b. It deals with how traits influence the environment

c. Both a and b
d. Null

4. Who popularised emotional intelligence?
a. Daniel goleman
b. Guilford
c. Sternberg
d. Null

5. IQ may be defined as
a. ma/ca x 100
b. ca/ma x 100
c. ma/100 x ca
d. Null

6. The three dimensional model of intelligence is proposed by .....
a. Guilford
b. Thorndike
c. Thurston
d. Null

7. The Stanford Binet Intelligence Scale
a. Was designed to test adult intelligence
b. Assumes that intellectual ability in childhood improves as age increases
c. Provide separate scores for performance intelligence and verbal intelligence
d. Null

8. ..... test assesses a wide variety of mental abilities?
a. IQ
b. Multiple intelligence
c. General intelligence
d. Null

9. Heredity influence .....
a. Attitude
b. Aptitude
c. Interest
d. Null

10. The ability to manage one's own thinking and problem solving is called .....
a. Meta cognitive skills
b. Experiential intelligence
c. General intelligence
d. Null

UNIT IV
THINKING PROCESS

STRUCTURE

4.1 Learning Objective
4.2 Introduction
4.3 Concepts of Thinking
4.4 Problem Solving
4.5 Decision Making
4.6 Creative Thinking
4.7 Characteristics of Creative Thinkers
4.8 Consciousness
4.9 Sleep and Dreams
4.10 Meditation
4.11 Hypnosis
4.12 Chapter Summary
4.13 Review Questions
4.14 Multiple Choice Questions

4.1 LEARNING OBJECTIVE

After completing this unit, students will be able to learn:

- **The concepts of thinking.**
- **The process of problem solving.**
- **The decision-making process.**
- **The method of creative thinking.**
- **The characteristics of creative thinkers.**
- **The meaning and significance of meditation.**

4.2 INTRODUCTION

Think for a moment: how many times and in what ways you are using the word think' in your day-to-day conversations. Sometimes probably, you use it as a synonym to remember (I can't think of her name), pay attention (think about it) or convey uncertainty (I think today my friend will visit me). Think has a wide range of meanings which cover a number of psychological processes. However, in psychology, thinking is a core subject area with an independent existence and a meaning of its own. In this chapter, we will discuss thinking as a mental activity directed at solving a problem, making inferences, judging certain facts, and deciding and choosing between options. Further, the nature and characteristics of creative thinking, what it involves and how it can be developed will also be discussed. Have you ever seen a small child building a tower with blocks or sand? The child would build a tower, dismantle it, make another one and so on and so forth. While doing this, the child sometimes talks to herself or himself. The speech would primarily include the steps s/he is following or want to follow ("not this" "a little small", "a tree at the back"), evaluation of the design ("nice"). You also might have experienced talking to yourself while solving a problem. Why do we talk while we think? Before starting our discussion on thinking, it is necessary to discuss thinking as the base of human cognition.

4.3 CONCEPTS OF THINKING

Thinking is the base of all cognitive activities or processes and is unique to human beings. It involves manipulation and analysis of information received from the environment. For example, while seeing a painting, you are not simply focusing on the colour of the painting or the lines and strokes, rather you are going beyond the given text in interpreting Its meaning and you are trying to relate the information to your existing knowledge. Understanding of the painting involves creation of new meaning that is added to your knowledge. Thinking, therefore, is a higher mental process through which we manipulate and analyse the acquired or existing Information. Such manipulation and analysis occur by means of abstracting, reasoning. imagining, problem solving, judging, and decision-making.

Thinking is mostly organised and goal directed. All day-to-day activities, ranging from cooking to solving a math problem have a goal., One desires to reach the goal by planning. recalling the steps that one has already followed in the past if the task is familiar or inferring strategies if the task is new. Thinking is an internal mental process, which can be inferred from overt behaviour. If you see a chess player engrossed in thinking for several minutes before making a move, you cannot observe what he is thinking. You can simply infer what he was thinking or what strategies he was trying to evaluate, from his next move.

Building Blocks of Thought

We already know that thinking relies on knowledge we already possess. Such knowledge is represented either in the form of mental images or words. People usually think by means of mental images or words. Suppose you are travelling by road to reach a place, which you had visited long back. You would try to use the visual representation of the street and other places. On the other hand, when you want to buy a storybook your choice would depend upon your knowledge about different authors, themes, etc. Here, your thinking is based on words or concepts, we shall first discuss mental image and then move on to concepts as the base of human thought.

Mental Image

Suppose, I ask you to imagine a cat sitting on a tree with its tail slightly raised and curved. You would most likely try to form a visual image of the whole situation. something similar to what the girl in the picture is doing in the given figure. Or think of another situation where you are asked to imagine yourself standing in front of the Taj Mahal and describe what you see. While doing this you are actually forming a visual image of the event. You are probably trying to see through your mind's eye, just like the way you would see a picture. Why is it useful to draw a map while giving directions to someone? Try to remember your earlier experience in reading

a map, remembering the different places and subsequently locating them in a physical map in your examination. In doing this, you were mostly forming and using mental images. An image is a mental representation of a sensory experience; it can be used to think about things, places, and events.

CONCEPTS

How do you know that a lion is not a bird but a parrot is? Whenever we come across an object or event familiar or unfamiliar, we try to identify the object or event by extracting its characteristics, matching it with the already existing category of objects and events. For example, when we see an apple, we categorise it as fruit, when we see a table, we categorise it as furniture, when we see a dog, we categorise it as an animal, and so on. When we see a new object, we try to look for its characteristics, match them with characteristics of an existing category, and matching is perfect we give it the name of that category. For example, while walking on the road you come across an unfamiliar quadruped of a very small size, with a face like a dog. wagging its tail and barking at strangers. You would no doubt identify it as a dog and probably think that it is of a new breed, which you have never seen before. You would also conclude that it would bite strangers. A concept thus. is a mental representation of a category. It refers to a class of objects, ideas or events that share common properties.

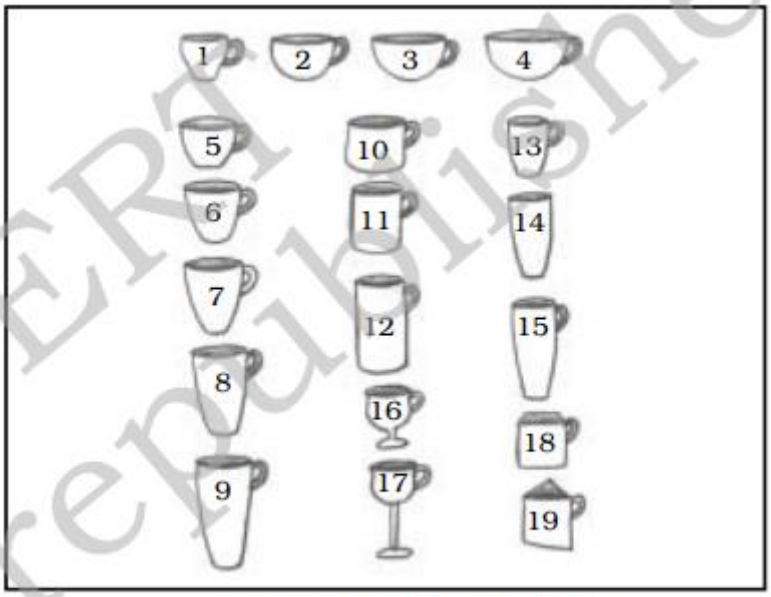
Why do we need to form concepts? Concept formation helps us in organising our knowledge so that whenever we need to access our knowledge, we can do it with less time and effort. It is something similar to what we do to organise our things at home. Children who are very systematic and organised, put their things such as books, note books, pen, pencil, and other accessories in specific places in their cupboard, so that in the morning, they don't have to struggle to find a particular book or the geometry box. In the library too you have seen books organised as per subject areas and labelled so that you would be able to find them quickly with less effort. Thus, for making our thought process quick and efficient, we form concepts and categorise objects and events.

Concepts usually fall into hierarchies or levels of understanding. The levels are classified as superordinate (the highest level), basic (an intermediate level), and subordinate (the lowest level). While speaking we mostly use basic level concepts. When a person says, "I saw a dog" a basic level is used. Such a statement is much more likely to be made than "I saw a four-legged animal that barks and wags its tail" or "an animal". The first (subordinate) is far too specific than is needed for conversation, while the second (superordinate) is far too vague to convey the intended message. Children also learn basic level concepts first and then the other levels.

Most of the concepts people use in thinking are neither clear nor unambiguous. They are fuzzy. They overlap one another and are often poorly defined. For example, under which category would you put a small stool? Would you put it under the category of 'chair' or under the category of 'table'? The answer to these questions is that we construct a model or prototype. A prototype is the best representative member of the category. Eleanor Rosch argues that in considering how people think about concepts, prototypes are often involved in real life. In prototype matching, people decide whether an item is a member of a category by comparing it with the most typical item(s) of the category.

Therefore, in the above example of the stool, you would try to compare it with a standard study chair (if you consider it as the typical example of a chair) and a small study table (if you consider it as the typical example of a table) and then match the properties of the stool with

these two concepts. If it matches with a chair you would put it under the category of "chair" otherwise under the category of "table". Consider another example: the concept 'cup'. Cups: (1) are concrete objects, (ii) are concave, (iii) can hold solids and liquids, (iv) have handles. What about cups we see in the market: with no handle, with a square shape or unusually big in size? In an experiment, the participants were shown the pictures of cups as in the given figure and W. Labov asked them: which of these would you describe as the prototype for the concept "cup"? Participants mostly chose number 5. Interestingly, some participants call number 4 a bowl and number 9 a vase because they were so different.



When a cup is a "cup"?

THE PROCESSES OF THINKING

So far, we have been discussing what we mean by thinking and what is the nature of thinking. We also learnt that thinking uses mental images and concepts as the base. Now we will discuss how thinking proceeds in a particular area: problem solving.

4.4 PROBLEM SOLVING

How do we proceed while repairing a broken cycle, or planning a summer tour or patching up a broken friendship? In some cases, the solution is reached quickly as in repair of a bicycle based on immediately available cues whereas others are more complex and require time and effort. Problem solving is thinking that is goal-directed. Almost all our day-to day activities are directed towards a goal. Here it is important to know that problems are not always in the form of obstacles or hurdles that one faces. It could be any simple activity that you perform to reach a defined goal, for example, preparing a quick snack for your friend who has just arrived at your place. In problem solving there is an initial state (i.e. the problem) and there is an end state (the goal). These two anchors are connected by means of several steps or mental operations. The table given below would clarify your understanding of various steps through which one solves a problem.

You can try out the problems given in the cup activity in the above content with your friends and observe how they are approaching the problem. You can ask them the steps they follow while solving these problems.

Obstacles to Solving Problems
Two major obstacles to solving a problem are mental set and lack of motivation.

Mental Set
Mental set is a tendency of a person to solve problems by following already tried mental operations or steps. Prior success with a particular strategy would sometimes help in solving a new problem. However, this tendency. also creates a mental rigidity that obstructs the problem solver to think of any new rules or strategies. Thus, while in some situations mental set can enhance the quality and speed of problem solving, in other situations it hinders problem solving. You might have experienced this while solving mathematical problems. After completing a couple of questions, you form an idea of the steps that are required to solve these questions and subsequently you go on following the same steps, until a point where you fail. At this point you may experience difficulty in avoiding the already used steps. Those steps would interfere in your thought for new strategies. However, in day-to-day activities we often rely on past experiences with similar or related problems.

Table 8.1 Mental Operations Involved in Solving a Problem

Let us look at the problem of organising a play in school on the occasion of Teachers' Day. Problem solving would involve the following sequence.

	Mental operation	*Nature of problem*
1.	*Identify the problem*	*A week is left for teachers' day and you are given the task of organising a play.*
2.	*Represent the problem*	*Organising a play would involve identification of an appropriate theme, screening of actors, actresses, arranging money, etc.*
3.	*Plan the solution: Set sub-goals*	*Search and survey various available themes for a play, and consult teachers and friends who have the expertise. The play to be decided, based on such considerations as cost, duration, suitability for the occasion, etc.*
4.	*Evaluate all solutions (plays)*	*Collect all the information/stage rehearsal.*
5.	*Select one solution and execute it*	*Compare and verify the various options to get the best solution (the play).*
6.	*Evaluate the outcome*	*If the play (solution) is appreciated, think about the steps you have followed for future reference for yourself as well as for your friends.*
7.	*Rethink and redefine problems and solutions*	*After this special occasion you can still think about ways to plan a better play in future.*

Like mental set, functional fixedness in problem solving occurs when people fail to solve a problem because they are fixed on a thing's usual function. If you have ever used a hardbound book to hammer a nail, then you have overcome functional fixedness.

Lack of Motivation
People might be great at solving problems, but all their skills and talents are of no use if they are not motivated. Sometimes people give up easily when they encounter a problem or failure in implementing the first step. Therefore, there is a need to persist in their effort to find a solution.

REASONING
If you find a person desperately running on the railway platform, you could infer a number of things such as: he is running to catch the train which is about to leave, he wants to see off his

friend sitting in the train which is about to leave, he has left his bag in the train and wants to get in before the train leaves the station. To figure out why this person is running, you could use different kinds of reasoning, deductive or inductive.

Deductive and Inductive Reasoning

Since your previous experience indicates that people run on the platform to catch a train, you would conclude that this person is getting late and is running to catch the train. The kind of reasoning that begins with an assumption is called deductive reasoning.

Thus, deductive reasoning begins with making a general assumption that you know or believe to be true and then drawing specific conclusion based on this assumption. In other words, it is reasoning from general to particular. Your general assumption is that people run on the railway platform only when they are getting late for the train. The man is running on the platform. Therefore, he is getting late for the train. One mistake that you are making (and generally people do commit such mistakes in deductive reasoning) is that you (they) assume but do not always know if the basic statement or assumption is true. If the base information is not true, i.e. people also run on the platform for other reasons then your conclusion would be invalid or wrong. Look at the mouse in the given figure.

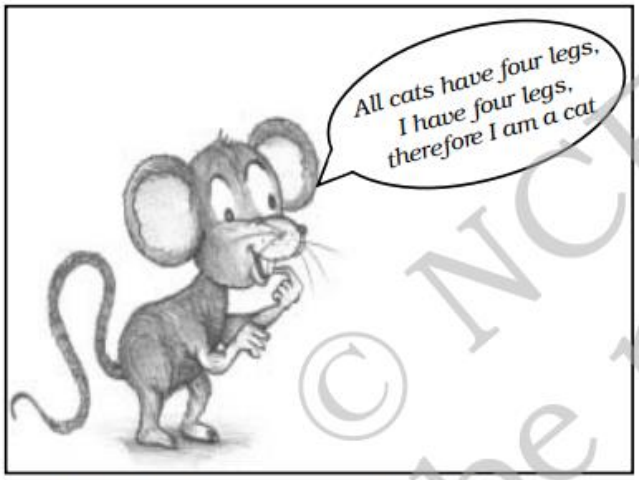


Fig.8.4 : Is the mouse making a True and Valid Conclusion?

Another way to figure out why the man is running on the platform is to use inductive reasoning. Sometimes you would analyse other possible reasons and observe what the man is actually doing and then draw a conclusion about his behaviour. Reasoning, that is based on specific facts and observation, is called inductive reasoning. Inductive reasoning is drawing a general conclusion based on particular observation. In the earlier example, you observed the other person's subsequent action or actions such as: entering into the train compartment and returning with a bag. Based on your observation you would conclude that the person had left his bag in the train. One mistake you would probably make here is jumping to a conclusion without knowing all possible facts. From the above discussion we can conclude that reasoning is the process of gathering and analysing information to arrive at conclusions. In this sense, reasoning is also a form of problem solving. The goal is to determine what conclusion can be drawn from certain given information.

Most cases of scientific reasoning are inductive in nature. Scientists and even lay persons consider a number of instances and try to determine what general rule covers them all. Think

of yourself using your knowledge of problem-solving steps discussed earlier in planning for a play, or conducting a project. Your inductive reasoning is being applied here.

Analogy is another form of reasoning which involves four parts. A is to B as C is to D with the relation between the first two parts being the same as the relation between the last two. For example, water is to fish as air is to human; white is to snow as black is to coal. Analogies can be helpful in solving problems. They help us in identifying and visualising the salient attributes of an object or event, which would otherwise go unnoticed.

4.5 DECISION MAKING

Inductive and deductive reasonings allow us to make judgments. In judgment we draw conclusions, form opinions, evaluate events, objects, based on knowledge and available evidences. Consider this example, the man is very talkative, likes to mix with people, can convince others with ease he would be most suitable for a salesperson's job. Our judgment of this person is based on the specific characteristics of an expert salesperson. Here we will discuss how we make decisions and judgments.

Sometimes judgments are automatic and require no conscious effort by the person and occur as a matter of habit, for example, applying brakes on seeing the red light. However, evaluating a novel or a literary text requires reference to your past knowledge and experience. Judging the beauty of a painting would involve your personal preferences. Thus, our judgments are not independent of our beliefs and attitudes. We also make changes in our judgments based on newly acquired information. Consider this example. A new teacher joins the school, students make on the-spot judgment of the teacher as being very strict. However, in subsequent classes, they closely interact with the teacher and make changes in their evaluation. Now they judge the teacher to be extremely student friendly.

Many of the problems you solve each day require you to make decisions. What to wear for the party? What to eat for dinner? What to say to your friend? The answer to all these lies in picking or choosing one of several choices. In decision-making, we sometimes choose among options based on choices of personal significance. Judgment and decision making are interrelated processes. In decision making the problem before us is to choose among alternatives by evaluating the cost and benefit associated with each alternative. For example, when you have the option to choose between psychology and economics as subjects in Class XI. your decision would be based upon your interest, future prospects, availability of books, efficiency of teachers, etc. You could evaluate them by talking to seniors and faculty members and attending a few classes, etc. Decision-making differs from other types of problem solving. In decision making we already know the various solutions or choices and one has to be selected. Suppose your friend is a very good player of badminton. S/he is getting an opportunity to play at the state level. At the same time the final. examination is approaching and s/he needs to study hard for it. S/he will have to choose between two options, practising for badminton or studying for the final examination. In this situation her/his decision will be based upon evaluation of all possible outcomes.

You would observe that people differ in their priorities and therefore their decisions will differ. In real life situations we take quick decisions and therefore, it is not possible always to evaluate every situation thoroughly and exhaustively.

4.6 CREATIVE THINKING

Creative thinking is also known as lateral thinking. Creative thinking is when someone is able to produce a vast amount of ideas and put them together in a way that may differ from someone else. A creative thinker often thinks outside the box and beyond the standard level of problem-solving. A person that is creative can make something new out of previous thoughts, things, or ideas.

Example: Lena is struggling to come up with a name for her new photography business. Lena begins writing down ideas and thinking of ideas throughout the day. Eventually, she decides that she wants to incorporate her name. She starts thinking of other words that are related to cameras and thinks of "lens". When she connects the two together, she wants to add a descriptive word to tie them both together. Through this creative process, she has come up with the name "Lena's Lovely Lens" for her photography business. Lena has used her thinking creatively throughout the day to come up with a name that stands out and will hopefully set her business up for success.

Critical thinking can be described as the process of a careful, systematic and skilful way of perceiving, evaluating, analysing, and producing ideas for multifaced conditions in every aspect of life or work through a logical, educated and less opinionated matter to bring up the best possible action to solve a problem. Critical thinking is one of the skills that are considered "soft skills" and having this skill to think rationally and logically about different issues in an enabling way to come up with solutions to these problems is a highly valuable skill in today's job market. Critical thinking involves a person's open-minded and inquisitive outlook. At the same time, a multitude of aspects of reasoning skills with good knowledge and understanding of the subject matter are definitely necessary for such thinking.

Employers always look for a critical thinking ability on every job candidate as critical thinking is one of the key elements that can make someone a highly valuable player in a company. A job candidate who can establish a history of using critical thinking skills, whether in school or at a previous job, has a higher chance of getting priority of getting hired over other candidates. Employers want to have employees who can always stay on their feet and solve problems decisively, quickly, but more importantly, efficiently and effectively.

A lot of employers complain about how their prospective job candidates lack the critical thinking skills required for the job. This complaint is usually expressed on newly graduated job applicants. So, what does this tell us? This tells us that critical thinking is something that individuals can develop through knowledge and experience and lacking either one can compromise the level and quality of the critical thought required. New graduate students might have substantial knowledge about the subject matter they have studied but may lack the necessary experience from the real world. Although it is understandable that employers might always have a very high expectation for any of their job positions, it will simply be like expecting milk out of a bull, to expect a critical thinking level of someone with a 10-year of experience in a newly graduated job applicant.

A lot of factors play a role in making someone a critical thinker. And one of the many players in shaping someone's way of critical thinking in college. Every homework, every assignment, every project and every exam question does help shape a student's brain to think a certain way, which in turn cumulatively play part in shaping a student's critical thinking skill. But we have said that real-life experience is necessary for developing critical thinking as much as education-based knowledge. And colleges can play a role in making their students well-rounded critical

thinkers not only by providing education but also by providing a hands-on real-life job experience as well.

Stages of Creative Thinking
Graham Wallas laid out four stages of creative thinking. Wallas said that we use preparation, incubation, illumination, and verification stages during the creative thinking process to help us discover creative solutions.

- Preparation
  This might seem self-explanatory, but preparation includes just about anything that helps you get started thinking creatively. Identifying the problem or idea and obtaining any necessary background information or details is helpful during this stage to support your future creative ideas. An important tactic in this stage is brainstorming. Gathering ideas and materials that may be needed to bring your idea or project to life is also important and will help you be ready to proceed with the creative process.

- Incubation
  Incubation actually involves unconscious thoughts and only requires that you take a break after all of that prep work. You might just be surprised at what else will come up throughout the day when you are not cognitively aware that your brain is at work. Perhaps you will become inspired by your surroundings and be able to incorporate them into your creative project!

- Illumination
  Illumination is the stage when things fall into place. You will have a brief moment of understanding that contributes to your idea or issue. Most of the time, illumination is when you develop new connections to really bring a creative solution or project together.

- Verification
  Verification is when you put everything you've learned through the creative process together. The actual creation of choice comes to life here if your ideas are successful. If not, you might have to go back through the creative process or use some critical thinking skills here.

Example:
Here is a scenario of someone going through the four-stage process of creativity:

Preparation
Jenny wants to find a way to raise money for her favourite charity. She brainstorms for a while and writes down some ideas that come to mind. Jenny knows she is excellent at baking, so she decides that this is the first step in raising money. Jenny makes a list of materials she needs as well as items she can create for her bake sale.

Incubation
Jenny continues with her day and allows her mind to rest since she still needs to find a place to sell her baked goods. She knows that things will eventually fall into place, so she takes the day to relax and let thoughts come to her. While on the way to the store, Jenny sees vendors at a fall festival.

Illumination

When driving back from the store, Jenny realizes she knows a local boutique owner who always hosts events. Jenny realizes that she can bake all of her goods throughout the week and set them up at her local boutique, per the owner's permission.

Verification
Through all of Jenny's hard work and determination, she is able to set up at the local boutique on Saturday and Sunday, which is perfect as plenty of customers frequent her shop on the weekends. Jenny brings her idea to life and raises over $1000 to donate to her favourite charity. Jenny now decides that she can continue baking in the future and set up at different local shops to serve her community.

4.7 CHARACTERISTICS OF CREATIVE THINKERS

Characteristics of People with Creative Thinking:
The correlation between intelligence and creativity is a positive one. This means that a 'certain level' of intelligence is required for creative thinking. A person with a low level of IQ can't be creative, but a person with a high IQ may not necessarily be creative. People with creative thinking have the following personality traits:

- Independent in their judgments.
- Work alone and independently.
- They are very curious.
- Observe a lot and question everything.
- They prefer complexity and some degree of apparent imbalance.
- Self-assertive and dominant.
- They don't follow society blindly and are non-conformist.
- Creative people dislike policing themselves or others.
- They think of the problem's solution in different contexts. their approach to problem-solving is open-ended.
- Creative people have a personal dimension called origence. People high on this dimension resist conventional approaches to solving problems. They rather do their things, even if it's unpopular or seems rebellious or non-conforming.

4.8 CONSCIOUSNESS

Have you ever had a fellow motorist stopped beside you at a red light, singing his brains out, or picking his nose, or otherwise behaving in ways he might not normally do in public? There is something about being alone in a car that encourages people to zone out and forget that others can see them. Although these little lapses of attention are amusing for the rest of us, they are also instructive when it comes to the topic of consciousness.
Consciousness is a term meant to indicate awareness. It includes awareness of the self, of bodily sensations, of thoughts and of the environment. In English, we use the opposite word "unconscious" to indicate senselessness or a barrier to awareness, as in the case of "Theresa fell off the ladder and hit her head, knocking herself unconscious." And yet, psychological theory and research suggest that consciousness and unconsciousness are more complicated than falling off a ladder. That is, consciousness is more than just being "on" or "off." For instance, Sigmund Freud (1856 – 1939), a psychological theorist understood that even while we are awake, many things lay outside the realm of our conscious awareness (like being in the car and forgetting the rest of the world can see into your windows). In response to this notion, Freud introduced the concept of the "subconscious" (Freud, 2001) and proposed that some of our memories and even our basic motivations are not always accessible to our conscious minds.

Upon reflection, it is easy to see how slippery a topic consciousness is. For example, are people conscious when they are daydreaming? What about when they are drunk? In this module, we will describe several levels of consciousness and then discuss altered states of consciousness such as hypnosis and sleep.

Levels of Awareness:
In 1957, a marketing researcher inserted the words "Eat Popcorn" onto one frame of a film being shown all across the United States. And although that frame was only projected onto the movie screen for 1/24th of a second—a speed too fast to be perceived by conscious awareness—the researcher reported an increase in popcorn sales by nearly 60%. Almost immediately, all forms of "subliminal messaging" were regulated in the US and banned in countries such as Australia and the United Kingdom. Even though it was later shown that the researcher had made up the data (he hadn't even inserted the words into the film), this fear about influences on our subconscious persists. At its heart, this issue pits various levels of awareness against one another. On the one hand, we have the "low awareness" of subtle, even subliminal influences. On the other hand, there is you—the conscious thinking, feeling you which includes all that you are currently aware of, even reading this sentence. However, when we consider these different levels of awareness separately, we can better understand how they operate.

Low Awareness:
You are constantly receiving and evaluating sensory information. Although each moment has too many sights, smells, and sounds for them all to be consciously considered, our brains are nonetheless processing all that information. For example, have you ever been at a party, overwhelmed by all the people and conversation, when out of nowhere you hear your name called? Even though you have no idea what else the person is saying, you are somehow conscious of your name (for more on this, "the cocktail party effect," see Noba's Module on Attention). So, even though you may not be aware of various stimuli in your environment, your brain is paying closer attention than you think.

Similar to a reflex (like jumping when startled), some cues, or significant sensory information, will automatically elicit a response from us even though we never consciously perceive it. For example, Öhman and Soares (1994) measured subtle variations in sweating of participants with a fear of snakes. The researchers flashed pictures of different objects (e.g., mushrooms, flowers, and most importantly, snakes) on a screen in front of them, but did so at speeds that left the participant clueless as to what he or she had actually seen. However, when snake pictures were flashed, these participants started sweating more (i.e., a sign of fear), even though they had no idea what they'd just viewed!
Although our brains perceive some stimuli without our conscious awareness, do they really affect our subsequent thoughts and behaviors? In a landmark study, Bargh, Chen, and Burrows (1996) had participants solve a word search puzzle where the answers pertained to words about the elderly (e.g., "old," "grandma") or something random (e.g., "notebook," "tomato"). Afterward, the researchers secretly measured how fast the participants walked down the hallway exiting the experiment. And although none of the participants were aware of a theme to the answers, those who had solved a puzzle with elderly words (vs. those with other types of words) walked more slowly down the hallway!

This effect is called priming (i.e., readily "activating" certain concepts and associations from one's memory) has been found in a number of other studies. For example, priming people by

having them drink from a warm glass (vs. a cold one) resulted in behaving more "warmly" toward others (Williams & Bargh, 2008). Although all of these influences occur beneath one's conscious awareness, they still have a significant effect on one's subsequent thoughts and behaviors.

In the last two decades, researchers have made advances in studying aspects of psychology that exist beyond conscious awareness. As you can understand, it is difficult to use self-reports and surveys to ask people about motives or beliefs that they, themselves, might not even be aware of! One way of side-stepping this difficulty can be found in the implicit associations test, or IAT (Greenwald, McGhee & Schwartz, 1998). This research method uses computers to assess people's reaction times to various stimuli and is a very difficult test to fake because it records automatic reactions that occur in milliseconds. For instance, to shed light on deeply held biases, the IAT might present photographs of European American faces and Asian faces while asking research participants to click buttons indicating either "good" or "bad" as quickly as possible. Even if the participant clicks "good" for every face shown, the IAT can still pick up tiny delays in responding. Delays are associated with more mental effort needed to process information. When information is processed quickly—as in the example of white faces being judged as "good"—it can be contrasted with slower processing—as in the example of Asian faces being judged as "good"—and the difference in processing speed is reflective of bias. In this regard, the IAT has been used for investigating stereotypes (Nosek, Banaji & Greenwald, 2002) as well as self-esteem (Greenwald & Farnam, 2000). This method can help uncover non-conscious biases as well as those that we are motivated to suppress.

High Awareness:
Just because we may be influenced by these "invisible" factors, it doesn't mean we are helplessly controlled by them. The other side of the awareness continuum is known as "high awareness." This includes effortful attention and careful decision making. For example, when you listen to a funny story on a date, or consider which class schedule would be preferable, or complete a complex math problem, you are engaging a state of consciousness that allows you to be highly aware of and focused on particular details in your environment.

Mindfulness is a state of higher consciousness that includes an awareness of the thoughts passing through one's head. For example, have you ever snapped at someone in frustration, only to take a moment and reflect on why you responded so aggressively? This more effortful consideration of your thoughts could be described as an expansion of your conscious awareness as you take the time to consider the possible influences on your thoughts. Research has shown that when you engage in this more deliberate consideration, you are less persuaded by irrelevant yet biasing influences, like the presence of a celebrity in an advertisement (Petty & Cacioppo, 1986). Higher awareness is also associated with recognizing when you're using a stereotype, rather than fairly evaluating another person (Gilbert & Hixon, 1991).

Humans alternate between low and high thinking states. That is, we shift between focused attention and a less attentive default sate, and we have neural networks for both (Raichle, 2015). Interestingly, the the less we're paying attention, the more likely we are to be influenced by non-conscious stimuli (Chaiken, 1980). Although these subtle influences may affect us, we can use our higher conscious awareness to protect against external influences. In what's known as the Flexible Correction Model (Wegener & Petty, 1997), people who are aware that their thoughts or behavior are being influenced by an undue, outside source, can correct their attitude against the bias. For example, you might be aware that you are influenced by mention of specific political parties. If you were motivated to consider a government policy you can take

your own biases into account to attempt to consider the policy in a fair way (on its own merits rather than being attached to a certain party).

To help make the relationship between lower and higher consciousness clearer, imagine the brain is like a journey down a river. In low awareness, you simply float on a small rubber raft and let the currents push you. It's not very difficult to just drift along but you also don't have total control. Higher states of consciousness are more like traveling in a canoe. In this scenario, you have a paddle and can steer, but it requires more effort. This analogy applies to many states of consciousness, but not all. What about other states such as like sleeping, daydreaming, or hypnosis? How are these related to our conscious awareness?

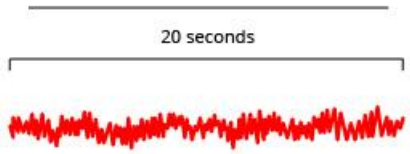
4.9 SLEEP AND DREAMS

Sleep

You may have experienced the sensation-- as you are falling asleep-- of falling and then found yourself physically jerking forward and grabbing out as if you were really falling. Sleep is a unique state of consciousness; it lacks full awareness but the brain is still active. People generally follow a "biological clock" that impacts when they naturally become drowsy, when they fall asleep, and the time they naturally awaken. The hormone melatonin increases at night and is associated with becoming sleepy. Your natural daily rhythm, or Circadian Rhythm, can be influenced by the amount of daylight to which you are exposed as well as your work and activity schedule. Changing your location, such as flying from Canada to England, can disrupt your natural sleep rhythms, and we call this jet lag. You can overcome jet lag by synchronizing yourself to the local schedule by exposing yourself to daylight and forcing yourself to stay awake even though you are naturally sleepy.

Interestingly, sleep itself is more than shutting off for the night (or for a nap). Instead of turning off like a light with a flick of a switch, your shift in consciousness is reflected in your brain's electrical activity. While you are awake and alert your brain, activity is marked by beta waves. Beta waves are characterized by being high in frequency but low in intensity. In addition, they are the most inconsistent brain wave and this reflects the wide variation in sensory input that a person processes during the day. As you begin to relax these changes to alpha waves. These waves reflect brain activity that is less frequent, more consistent and more intense. As you slip into actual sleep you transition through many stages. Scholars differ on how they characterize sleep stages with some experts arguing that there are four distinct stages (Manoach et al., 2010), while others recognize five (Šušmáková, & Krakovská, 2008) but they all distinguish between those that include rapid eye movement (REM) and those that are non-rapid eye movement (NREM). In addition, each stage is typically characterized by its own unique pattern of brain activity:

- **Stage 1** (called NREM 1, or N1) is the "falling asleep" stage and is marked by theta waves.
- **Stage 2** (called NREM 2, or N2) is considered a light sleep. Here, there are occasional "sleep spindles," or very high intensity brain waves. These are thought to be associated with the processing of memories. NREM 2 makes up about 55% of all sleep.
- **Stage 3** (called NREM 3, or N3) makes up between 20-25% of all sleep and is marked by greater muscle relaxation and the appearance of delta waves.
- **Finally**, REM sleep is marked by rapid eye movement (REM). Interestingly, this stage—in terms of brain activity—is similar to wakefulness. That is, the brain waves occur less intensely than in other stages of sleep. REM sleep accounts for about 20% of all sleep and is associated with dreaming.

Neural Activity	Label	Stage	Type
	Awake	Awake	Awake
	Sleep Onset	N1	NREM
	Light Sleep	N2	NREM
	Slow-Wave	N3	NREM
	Dream	REM	REM

Dreams

Dreams are, arguably, the most interesting aspect of sleep. Throughout history dreams have been given special importance because of their unique, almost mystical nature. They have been thought to be predictions of the future, hints of hidden aspects of the self, important lessons about how to live life, or opportunities to engage in impossible deeds like flying. There are several competing theories of why humans dream. One is that it is our nonconscious attempt to make sense of our daily experiences and learning. Another, popularized by Freud, is that dreams represent taboo or troublesome wishes or desires. Regardless of the specific reason we know a few facts about dreams: all humans dream, we dream at every stage of sleep, but dreams during REM sleep are especially vivid. One under-explored area of dream research is the possible social functions of dreams: we often share our dreams with others and use them for entertainment value.

Sleep serves many functions, one of which is to give us a period of mental and physical restoration. Children generally need more sleep than adults since they are developing. It is so vital, in fact, that a lack of sleep is associated with a wide range of problems. People who do not receive adequate sleep are more irritable, have slower reaction time, have more difficulty sustaining attention, and make poorer decisions. Interestingly, this is an issue relevant to the

lives of college students. In one highly cited study researchers found that 1 in 5 students took more than 30 minutes to fall asleep at night, 1 in 10 occasionally took sleep medications, and more than half reported being “mostly tired” in the mornings (Buboltz, et al, 2001).

4.10 MEDITATION

Meditation is a mental exercise that trains attention and awareness. Its purpose is often to curb reactivity to one's negative thoughts and feelings, which, though they may be disturbing and upsetting and hijack attention from moment to moment, are invariably fleeting.

The Benefits of Meditation

It’s impossible for us to make our thoughts disappear; often, the more we try to suppress them, the louder they become. But practicing meditation can help clear away the mind’s chatter. Studies show that meditating even for as little as 10 minutes increases the brain's alpha waves (associated with relaxation) and decreases anxiety and depression.

Meditation has been shown to increase focus, reduce stress, and promote calmness. It can also help people recognize and accept negative emotions—especially when it is done in combination with mindfulness practices that keep people grounded in experiencing the present. It may be particularly effective when the meditator has social support, such as in a structured group setting or with the help of a friend or family member.

In mindfulness meditation, one turns their attention to a single point of reference, such as one’s breath or bodily sensations, or a word or phrase known as a mantra. The practice has been shown to decrease distraction and rumination, make negative automatic thoughts seem easier to let go of, and promote greater enjoyment of the present moment. Loving-kindness meditation directs one’s focus toward developing feelings of goodwill, kindness, and warmth for others. It can help boost empathy and compassion, and curb charged responses to negative thoughts.

Meditation acts on areas of the brain that modulate the autonomic nervous system, which governs such functions as digestion and blood pressure—functions heavily affected by chronic stress. Through its physiological effects, meditation has been found to effectively counter heart disease, chronic pain, and other conditions. It is also valuable in improving emotion regulation.

Meditation doesn’t require someone to get rid of all their thoughts, which isn’t even possible. While meditating can be relaxing, it is also physically and mentally demanding to train oneself to focus differently. People tend to think of meditating as a solitary activity, but it can be just as beneficial in a group setting. And people often believe they’re not capable of meditating, but the truth is that there is no wrong way to meditate—just trying can bring about positive changes.

For people who struggle with emotional regulation generally, or with specific psychiatric diagnoses, meditation can be a way to circumvent or avoid negative self-talk that is otherwise difficult to ignore. Meditation helps to provide an emotional buffer, giving an individual time to reflect before succumbing to negativity or acting impulsively. As a result, meditation has become a common prescription for mental health conditions.

4.11 HYPNOSIS

If you've ever watched a stage hypnotist perform, it may paint a misleading portrait of this state of consciousness. The hypnotized people on stage, for example, appear to be in a state similar to sleep. However, as the hypnotist continues with the show, you would recognize some profound differences between sleep and hypnosis. Namely, when you're asleep, hearing the word "strawberry" doesn't make you flap your arms like a chicken. In stage performances, the hypnotized participants appear to be highly suggestible, to the point that they are seemingly under the hypnotist's control. Such performances are entertaining but have a way of sensationalizing the true nature of hypnotic states.

Hypnosis is an actual, documented phenomenon—one that has been studied and debated for over 200 years (Pekala et al., 2010). Franz Mesmer (1734 – 1815) is often credited as among the first people to "discover" hypnosis, which he used to treat members of elite society who were experiencing psychological distress. It is from Mesmer's name that we get the English word, "mesmerize" meaning "to entrance or transfix a person's attention." Mesmer attributed the effect of hypnosis to "animal magnetism," a supposed universal force (similar to gravity) that operates through all human bodies. Even at the time, such an account of hypnosis was not scientifically supported, and Mesmer himself was frequently the center of controversy.

Over the years, researchers have proposed that hypnosis is a mental state characterized by reduced peripheral awareness and increased focus on a singular stimulus, which results in an enhanced susceptibility to suggestion (Kihlstrom, 2003). For example, the hypnotist will usually induce hypnosis by getting the person to pay attention only to the hypnotist's voice. As the individual focuses more and more on that, s/he begins to forget the context of the setting and responds to the hypnotist's suggestions as if they were his or her own. Some people are naturally more suggestible, and therefore more "hypnotizable" than are others, and this is especially true for those who score high in empathy (Wickramasekera II & Szlyk, 2003). One common "trick" of stage hypnotists is to discard volunteers who are less suggestible than others.

Dissociation is the separation of one's awareness from everything besides what one is centrally focused on. For example, if you've ever been daydreaming in class, you were likely so caught up in the fantasy that you didn't hear a word the teacher said. During hypnosis, this dissociation becomes even more extreme. That is, a person concentrates so much on the words of the hypnotist that s/he loses perspective of the rest of the world around them. As a consequence of dissociation, a person is less effortful, and less self-conscious in consideration of his or her own thoughts and behaviors. Similar to low awareness states, where one often acts on the first thought that comes to mind, so, too, in hypnosis does the individual simply follow the first thought that comes to mind, i.e., the hypnotist's suggestion. Still, just because one is more susceptible to suggestion under hypnosis, it doesn't mean s/he will do anything that's ordered. To be hypnotized, you must first want to be hypnotized (i.e., you can't be hypnotized against your will; Lynn & Kirsh, 2006), and once you are hypnotized, you won't do anything you wouldn't also do while in a more natural state of consciousness (Lynn, Rhue, & Weekes, 1990).

Today, hypnotherapy is still used in a variety of formats, and it has evolved from Mesmer's early tinkering with the concept. Modern hypnotherapy often uses a combination of relaxation, suggestion, motivation and expectancies to create a desired mental or behavioral state. Although there is mixed evidence on whether hypnotherapy can help with addiction reduction (e.g., quitting smoking; Abbot et al., 1998) there is some evidence that it can be successful in treating sufferers of acute and chronic pain (Ewin, 1978; Syrjala et al., 1992). For example,

one study examined the treatment of burn patients with either hypnotherapy, pseudo-hypnosis (i.e., a placebo condition), or no treatment at all. Afterward, even though people in the placebo condition experienced a 16% decrease in pain, those in the actual hypnosis condition experienced a reduction of nearly 50% (Patterson et al., 1996). Thus, even though hypnosis may be sensationalized for television and movies, its ability to disassociate a person from their environment (or their pain) in conjunction with increased suggestibility to a clinician's recommendations (e.g., "you will feel less anxiety about your chronic pain") is a documented practice with actual medical benefits.

Now, similar to hypnotic states, trance states also involve a dissociation of the self; however, people in a trance state are said to have less voluntary control over their behaviors and actions. Trance states often occur in religious ceremonies, where the person believes he or she is "possessed" by an otherworldly being or force. While in trance, people report anecdotal accounts of a "higher consciousness" or communion with a greater power. However, the body of research investigating this phenomenon tends to reject the claim that these experiences constitute an "altered state of consciousness."

Most researchers today describe both hypnosis and trance states as "subjective" alterations of consciousness, not an actually distinct or evolved form (Kirsch & Lynn, 1995). Just like you feel different when you're in a state of deep relaxation, so, too, are hypnotic and trance states simply shifts from the standard conscious experience. Researchers contend that even though both hypnotic and trance states appear and feel wildly different than the normal human experience, they can be explained by standard socio-cognitive factors like imagination, expectation, and the interpretation of the situation.

4.12 CHAPTER SUMMARY

Thinking is a complex mental process through which we manipulate information (either acquired or stored). It is an internal process that can be inferred from behaviour. Thinking involves mental representations that are either mental images or concepts. Complex thought processes are problem solving, reasoning, decision making, judgment, and creative thinking. Problem solving is thinking directed towards the solution of a specific problem. Mental set, functional fixedness, lack of motivation and persistence are some of the hindrances for effective problem solving. Reasoning, like problem solving, is goal directed, involves inference and can be either deductive or inductive. In making judgment, we draw conclusions, form opinions, make evaluations about objects or events. In decision-making one must choose among several available alternatives. Judgment and decision-making are interrelated processes. Creative thinking involves the production of something new and original-it may be an idea, object or solution to a problem. Developing creative thinking requires overcoming blocks to creative expression and using strategies to enhance creative thinking skills and abilities. Language is distinctly human. It consists of symbols, organised on the basis of certain rules to communicate intentions, feelings, motives, and desires among human beings. Major development in language occurs during the first two to three years of age. Language and thought are intricately related.

4.13 REVIEW QUESTIONS

SHORT ANSWER TYPE QUESTIONS

1. **Explain the nature of thinking.**
2. **What is a concept?**
3. **How can creative thinking be enhanced?**
4. **How does reasoning help in solving problems?**

5. **Briefly discuss the importance of meditation in life.**

LONG ANSWER TYPE QUESTIONS

1. **Identify obstacles that one may encounter in problem solving.**
2. **Are judgment and decision-making interrelated processes?**
3. **Why is divergent thinking important in creative thinking process?**
4. **What are the various barriers to creative thinking?**
5. **Explain the role of concept in the thinking process.**

4.14 MULTIPLE CHOICE QUESTIONS

1. **_____ is a mental exercise that trains attention and awareness**
   a. **Meditation**
   b. **Creative Thinking**
   c. **Hypnosis**
   d. **Hallucination**

2. **_____ serves many functions, one of which is to give us a period of mental and physical restoration.**
   a. **Sleep**
   b. **Dreams**
   c. **Creative Thinking**
   d. **Hypnosis**

3. **_____ is a state of higher consciousness that includes an awareness of the thoughts passing through one's head.**
   a. **Mindfulness**
   b. **Hypnosis**
   c. **Hallucination**
   d. **Sleep**

4. **_____ is a term meant to indicate awareness.**
   a. **Consciousness**
   b. **Hypnosis**
   c. **Hallucination**
   d. **Sleep**
5. **_____ introduced the concept of the "subconscious"**
   a. **Sigmund Freud**
   b. **Charles Darwin**
   c. **Carl Jung**
   d. **None of these**

6. **_____ is when you put everything you've learned through the creative process together.**
   a. **Illumination**
   b. **Incubation**
   c. **Preparation**
   d. **Verification**

7. **_____ actually, involves unconscious thoughts and only requires that you take a break after all of that prep work.**

a. **Illumination**
b. **Incubation**
c. **Preparation**
d. **Verification**

8. **_____ is when you develop new connections to really bring a creative solution or project together.**
   a. **Illumination**
   b. **Incubation**
   c. **Preparation**
   d. **Verification**

9. **_____ includes just about anything that helps you get started thinking creatively.**
   a. **Illumination**
   b. **Incubation**
   c. **Preparation**
   d. **Verification**

10. **_____ is a tendency of a person to solve problems by following already tried mental operations or steps.**
    a. **Mental set**
    b. **Meditation**
    c. **Creative Thinking**
    d. **Hypnosis**

UNIT V
LANGUAGE

STRUCTURE

5.1 Learning Objective
5.2 Introduction to Language
5.3 Elements of Language
5.4 Understanding Sentences and Conversation
5.5 Stages of Language Development
5.6 Acquiring of Language
5.7 Chapter Summary
5.8 Review Questions
5.9 Multiple Choice Questions

5.1 LEARNING OBJECTIVE

After completing this unit, students will be able to learn:

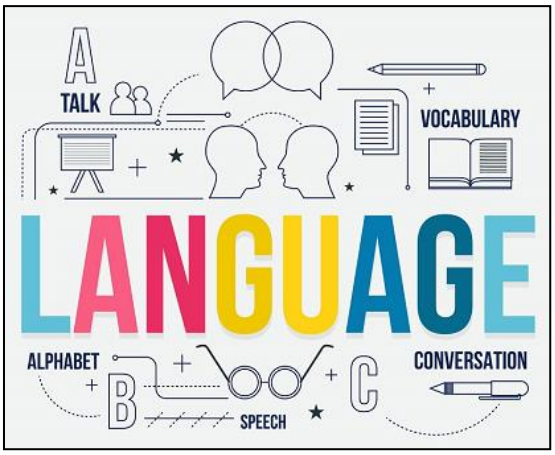
- **The meaning of languages.**
- **The different elements of language.**
- **The stages of language development.**
- **The process of acquiring language.**

5.2 INTRODUCTION TO LANGUAGE

Language is a form of communication that allows intercourse between multiple people that is arbitrary (in words individually), generative (in word placement), and constantly evolving.

Many may dispute this meaning of language because some equate language to communication in general. Where communication can be any action, language must have particular limits placed within its meaning to protect what may constitute a formal language that is, to distinguish between noises or grunts and communicative utterances in languages.

The lexicon of a language (words used to form a language) allows multiple combinations of words with the possibility of never saying the same group of words the same way!



Language is not a behavior because of its changing nature its unpredictability. There are slight variations in tone that portray a different meaning for words when uttered that prove processes beyond physical and biochemical reactions affect speech.

Over 170,000 words exist in the English lexicon, which continues to grow as new things need naming! Though the words in the English lexicon are defined and have specific meanings, their nature changes as the generations change; in other words, "cool" means more than the temperature of something or a place.

Where communication can be any action, language must have particular limits within its meaning to protect what may constitute a proper language.

Language is a system of conventional spoken or written symbols used by people in a shared culture to communicate with each other. A language both reflects and affects a culture's way of thinking, and changes in a culture influence the development of its language. Related languages become more differentiated when their speakers are isolated from each other. When speech communities come into contact (e.g., through trade or conquest), their languages influence each other. Most existing languages are grouped with other languages descended "genetically" from a common ancestral language (*see* historical linguistics).

The broadest grouping of languages is the language family. For example, all the Romance languages are derived from Latin, which in turn belongs to the Italic branch of the Indo-European language family, descended from the ancient parent language, Proto-Indo-European. Other major families include, in Asia, Sino-Tibetan, Austronesian, Dravidian, Altaic, and Austroasiatic; in Africa, Niger-Congo, Afro-Asiatic, and Nilo-Saharan; and in the Americas, Uto-Aztecan, Maya, Otomanguean, and Tupian.

Relationships between languages are traced by comparing grammar and syntax and especially by looking for cognates (related words) in different languages. Language has a complex structure that can be analysed and systematically presented (*see* linguistics). All languages begin as speech, and many go on to develop writing systems. All can employ different sentence structures to convey mood. They use their resources differently for this but seem to be equally flexible structurally.

The principal resources are word order, word form, syntactic structure, and, in speech, intonation. Different languages keep indicators of number, person, gender, tense, mood, and other categories separate from the root word or attach them to it. The innate human capacity to learn language fades with age, and languages learned after about age 10 are usually not spoken as well as those learned earlier.

5.3 ELEMENTS OF LANGUAGE

Language is a very important aspect of anyone's public speaking performance. Whether a speaker uses lots of complicated words or words most people have in their vocabularies, language will determine how an audience experiences the speech. To help you think through your language choices, we are going to talk about six important elements of language and how they affect audience perceptions.

1. Clarity

The first important element of language is clarity, or the use of language to make sure the audience understands a speaker's ideas in the way the speaker intended. While language, or

verbal communication, is only one channel we can use to transmit information, it is a channel that can lend itself to numerous problems. For example, as discussed earlier, if people have different connotative definitions for words, the audience can miss the intended meaning of a message.

Imagine you're listening to a speaker talking and he or she uses the phrase, "Older female relative who became aerodynamic venison road kill," or "Obese personification fabricated of compressed mounds of minute crystals." If you're like most people, these two phrases just went right over your head. We'll give you a hint, these are two common Christmas songs. The first phrase refers to "Grandma Got Run Over by a Reindeer," and the second one is "Frosty the Snowman." Notice that in both of these cases, the made-up title with all the polysyllabic words is far less clear than the commonly known one. While you are probably unlikely to deliberately distort the clarity of your speech by choosing such outlandish words to express simple thoughts, the point we are illustrating is that clear language makes a big difference in how well a message can be understood.

2. Economy

Another common mistake among new public speakers is thinking that more words are more impressive. In fact, the opposite is true. When people ramble on and on without actually making a point, audiences become bored and distracted. To avoid this problem, we recommend word economy, or the use of only those words necessary to accurately express your idea. If the fundamental idea you are trying to say is, "that stinks," then saying something like "while the overall outcome may be undesirable and definitely not recommended" becomes overkill. We do have one caveat here: you want to make sure that your language isn't so basic that it turns off your audience. If you are speaking to adults and use vocabulary appropriate for school children, you'll end up offending your audience. So, while economy is definitely important, you don't want to become so overly basic that you are perceived as "talking down" to your audience.

3. Obscenity

Obscenity, or indecent language, consists of curse words or pornographic references. While it may be fun to use obscene language in casual conversations with your friends, we cannot recommend using obscene language while delivering a speech. Even if you're giving a speech related to an obscene word, you must be careful with your use of the word itself. Whether we agree with societal perceptions of obscenity, going out of our way to use obscenity will end up focusing the audience on the obscenity and not on our message.

4. Obscure Language/Jargon

Obscure language and jargon are two terms that closely relate to each other. Obscure language refers to language choices that are not typically understood or known by most of your audience. Imagine you're listening to a speech and the speaker says, "Today I've given you a plethora of ideas for greening your workplace." While you may think the word "plethora" is commonly known, we can assure you that many people have no idea that plethora means many or an abundance of something. Similarly, you may think most people know what it means to "green" a workplace, but in fact many people do not know that it means to make the workplace more environmentally friendly, or to reduce its impact on the environment. In the case of this example, plethora simply means the speaker has given many ideas for greening the workplace. You can still use the word "plethora," but you should include a definition so that you're sure all of your audience will understand.

Jargon, on the other hand, refers to language that is commonly used by a highly specialized group, trade, or profession. For example, there is legal jargon, or the language commonly used by and understood by lawyers. There is also medical jargon, or the language commonly used by and understood by health care practitioners. Every group, trade, or profession will have its own specific jargon. The problem that occurs for many speakers is not realizing that jargon is group, trade, or profession specific and not universal. One common form of jargon is the acronym, a word formed by taking the first letters or groups of letters of words, such as NASDAQ (National Association of Securities Dealers Automated Quotations), PET (positron emission tomography) scan, or IHOP (International House of Pancakes). Another form of jargon is initialism, formed by pronouncing the initials rather than the name of an organization or other entity. For example, CDC stands for the Centers for Disease Control and Prevention, FMRI stands for Functional Magnetic Resonance Imaging, and B of A stands for Bank of America. In political discussions, you may come across various CFRs, or Codes of Federal Regulations. If you are going to use a specific acronym within your speech, you need to explain it the first time you use it.

For example, you could say, according to the United States Code of Federal Regulations, or CFR, employment discrimination in the Department of Homeland Security is not allowed based on biological sex, religion, sexual orientation, or race. Furthermore, the US CFR does not permit discrimination in receiving contracts based on biological sex, religion, sexual orientation, or race. By defining the jargon upon first mention, we are subsequently able to use the jargon because we can be certain the audience now understands the term.

5. Power

Power is an individual's ability to influence another person to think or behave in a manner the other person would not have otherwise done. DeVito examined how language can be used to help people gain power over others or lose power over others (DeVito, 2009). IN the given table "Powerful and Powerless Language" provides examples of both powerful language and powerless language a speaker can use during a speech. Powerless language should generally be avoided in public speaking because it can damage audience perceptions of the speaker's credibility.

POWERFUL AND POWERLESS LANGUAGE

Language Strategy	**Definition**	**Example**
Powerful Language		
Direct Requests	Asking the audience to engage in a specific behavior.	"At the conclusion of today's speech, I want you to go out and buy a bottle of hand sanitizer and start using it to protect your life."
Bargaining	An agreement that affects both parties of a situation.	"If you vote for me, I promise to make sure that our schools get the funding they so desperately need."

Language Strategy	Definition	Example
Ingratiation	Attempting to bring oneself into the favor or good graces of an audience.	"Because you are all smart and talented people, I know that you will see why we need to cut government spending."
Powerless Language		
Hesitations	Language that makes the speaker sound unprepared or uncertain.	"Well, as best I was able to find out, or I should say, from what little material I was able to dig up, I kind of think that this is a pretty interesting topic."
Intensifiers	Overemphasizing all aspects of the speech.	"Great! Fantastic! This topic is absolutely amazing and fabulous!"
Disqualifiers	Attempts to downplay one's qualifications and competence about a specific topic.	"I'm not really an expert on this topic, and I'm not very good at doing research, but here goes nothing."
Tag Questions	A question added to the end of a phrase seeking the audience's consent for what was said.	"This is a very important behavior, isn't it?" or "You really should do this, don't you think?"
Self-Critical Statements	Downplaying one's own abilities and making one's lack of confidence public.	"I have to tell you that I'm not a great public speaker, but I'll go ahead and give it a try."
Hedges	Modifiers used to indicate that one isn't completely sure of the statement just made.	"I really believe this may be true, sort of." "Maybe my conclusion is a good idea. Possibly not."
Verbal Surrogates	Utterances used to fill space while speaking; filler words.	"I was, like, err, going to, uhhh, say something, um, important, like, about this."

6. Variety

The last important aspect of language is variety, or a speaker's ability to use and implement a range of different language choices. In many ways, variety encompasses all the characteristics of language previously discussed in this chapter. Often speakers find one language device and then beat it into the ground like a railroad spike. Unfortunately, when a speaker starts using the same language device too often, the language device will start to lose the power that it may have had. For this reason, we recommend that you always think about the language you plan on using in a speech and make sure that you use a range of language choices.

5.4 UNDERSTANDING SENTENCES AND CONVERSATION

Parents and children talk together in a variety of contexts about a range of topics. They discuss shared experiences of the recent past; expectations for routine and unusual events in the immediate future; shared observations of the behavior of other people; the content of storybooks and other texts (including the Bible), TV, video, computer software, and other media; natural phenomena (such as rainstorms, plant growth, and animals) observed at home, park, zoo, or in a museum; and conflicts that emerge in the course of everyday events. Parents and children discuss not only everyday events but also the critical experiences of children's lives, such as emergencies, major changes (such as beginning preschool), or family life transitions. Parents and children not only talk about events but also during events, and the content and style of their conversation focuses children's attention on certain features of their shared experience rather than others.

Why should the content and quality of conversational discourse affect the development of understanding about the psychological and natural world? Several reasons are apparent from research in this area, and because none is exclusive it is likely that most everyday conversations incorporate several of these conceptual catalysts.

First, words provide semantic referents for elusive psychological or natural phenomena that otherwise might be inchoate or unclear in the child's pre-linguistic mental representations. Infants distinguish emotional expressions before their first birthday, but the advent of language enables toddlers to parse the ongoing flow of observed emotional behavior into discrete phenomena labelled "happy," "sad," "mad," and so forth. It is not only the language they learn that "lexicalizes" mental, emotional, and other phenomena but also the language they hear in conversation with adults who convey psychological explanations for the behavior they observe or scientific explanations for the natural events they watch. By naming psychological and natural phenomena, adults and children make them an object of explicit reflection and analysis.

Words are important not only because of the categories that make explicit the invisible psychological and natural phenomena that interest children but also because they are the avenue by which knowledge structures concerning these phenomena become organized. In conversation, adults disclose the psychological realities of human behavior because they have long inhabited a psychological world of intentions, goals, feelings, desires, thoughts, traits, and beliefs and because it is natural for them to discuss people's behavior with reference to these internal motivators.

As young children begin to comprehend the semantic referents to psychological states, they develop explicit knowledge structures for these phenomena and conceptualize their own inner experiences according to these linguistic (and cultural) categories. Moreover, words provide the avenue by which young children can share these experiences with others, compare their direct representations of experience with the secondary representations of another through conversation, and appropriate knowledge about these experiences. This is true of the range of phenomena that young children seek to comprehend: the psychological world, the natural world, and even supernatural phenomena.

Second, conversational discourse directs attention to significant elements of an event and aids in comprehension, memory, or understanding. Conversation during an event focuses the child's attention on significant or salient features, such as when parents point out the structures of a flower or draw attention to another's feelings when the child is in conflict. Shared reminiscing contributes to the child's retrieval of significant aspects of past experiences and provides narrative coherence and structure to the child's representation of past events. This is especially

valuable if the past event in discussion was confusing or emotionally stressful to the child. Talking about future events creates anticipatory event representations, providing predictability about what will occur in the near term. In each case, understanding and memory in a conversational context are likely to be much different than when the child is alone, and conversation may help to reconstruct the child's recollection and comprehension in significant ways.

Third, linguistic syntax itself can aid in comprehending psychological states. When adults use mental verbs as subordinate clauses in their conversations with children (e.g., "I thought you took the dog for a walk"), these sentential complements highlight the mental and psychological states related to behavior. Young children begin to use these complements early, and their use of these and other conversational references to mental states elicit further references to psychological states from adults.

Sabbagh and Callanan in 1998 found, for example, that when 3- to 5-year-olds initiated conversational references to the mind by implicitly contrasting different mental states or saying "I don't know," their parents responded by highlighting the representational aspects of mental states, and this often elicited further explicit talk about mental states from their children. De Villiers and de Villiers (2003) argue that the acquisition of the syntactic ability to understand sentential complements underlies the growth of false-belief understanding because sentential complements highlight incorrect mental states embedded within accurate statements, and there is experimental evidence in support of this view. What Reese and Cleveland call "metamemory comments" (e.g., "I had forgotten that part") of a shared reminiscence may serve a similar function for the development of psychological understanding.

Fourth, the experience of conversation is a tutorial in shared and divergent psychological states. Conversation potentially confronts each participant with the realization that another person has a different representation of a shared experience, and this contributes to an awareness of the subjectivity of feelings, goals, desires, beliefs, and other psychological states. Divergent understanding also alerts young children to knowledge that they do not have. Encountering different subjective viewpoints in conversation may be an early and frequent experience for young children. Levine, Stein, and Liwag in 1999 found that parents and young children commonly disagreed about the child's feelings and experiences when recalling shared events, often because adults made assumptions about the child's goals that were incorrect, particularly when children were unhappy. Harmony in perspective makes for satisfying parent-child interaction, but divergent perspectives can be a catalyst to conceptual growth.

Finally, through language the child is able to appropriate cultural values, beliefs, temporal perspective, and a sense of personhood that comes from being a cultural member. This also begins early, as a toddler's perception of emotion in self and others becomes channelled into the cultural categories for emotion reflected in language terms. Temporal understanding is fostered by linguistic structures denoting activity in time and by conversational prompts that relate past and future events to the present self. More broadly, and with increasing age, a child's comprehension of moral values, human traits, motivational attributions, and other human qualities is facilitated by linguistic referents to these abstract entities as they are defined by the culture.

Parent-child conversations are especially influential because they are ubiquitous and salient and because they occur in a relational context characterized by diverse interactional exchanges, mutual reciprocity, differential competence, and strong emotion. Relationships vary in warmth

and quality, of course, and the nature of the relationship may also moderate how parent-child conversation influences developing understanding. Laible and Thompson found, for example, that the frequency of maternal references to emotion in conversations about the child's prior behavior was associated with conscience development in 4- year-olds. But this association was especially strong for children with insecure attachments to their mothers, perhaps reflecting the added benefits for these children of explicit maternal references to other people's feelings.

5.5 STAGES OF LANGUAGE DEVELOPMENT

Given the remarkable complexity of a language, one might expect that mastering a language would be an especially arduous task; indeed, for those of us trying to learn a second language as adults, this might seem to be true. However, young children master language very quickly with relative ease. B. F. Skinner (1957) proposed that language is learned through reinforcement.

Noam Chomsky (1965) criticized this behaviorist approach, asserting instead that the mechanisms underlying language acquisition are biologically determined. The use of language develops in the absence of formal instruction and appears to follow a very similar pattern in children from vastly different cultures and backgrounds. It would seem, therefore, that we are born with a biological predisposition to acquire a language. Moreover, it appears that there is a critical period for language acquisition, such that this proficiency at acquiring language is maximal early in life; generally, as people age, the ease with which they acquire and master new languages diminishes.

Children begin to learn about language from a very early age. In fact, it appears that this is occurring even before we are born. New-borns show preference for their mother's voice and appear to be able to discriminate between the language spoken by their mother and other languages. Babies are also attuned to the languages being used around them and show preferences for videos of faces that are moving in synchrony with the audio of spoken language versus videos that do not synchronize with the audio.

TABLE: STAGES OF LANGUAGE AND COMMUNICATION DEVELOPMENT

Stage	Age	Developmental Language and Communication
1	0–3 months	Reflexive communication
2	3–8 months	Reflexive communication; interest in others
3	8–13 months	Intentional communication; sociability
4	12–18 months	First words
5	18–24 months	Simple sentences of two words
6	2–3 years	Sentences of three or more words
7	3–5 years	Complex sentences; has conversations

You may recall that each language has its own set of phonemes that are used to generate morphemes, words, and so on. Babies can discriminate among the sounds that make up a

language (for example, they can tell the difference between the “s” in vision and the “ss” in fission); early on, they can differentiate between the sounds of all human languages, even those that do not occur in the languages that are used in their environments. However, by the time that they are about 1 year old, they can only discriminate among those phonemes that are used in the language or languages in their environments

After the first few months of life, babies enter what is known as the babbling stage, during which time they tend to produce single syllables that are repeated over and over. As time passes, more variations appear in the syllables that they produce. During this time, it is unlikely that the babies are trying to communicate; they are just as likely to babble when they are alone as when they are with their caregivers. Interestingly, babies who are raised in environments in which sign language is used will also begin to show babbling in the gestures of their hands during this stage.

Generally, a child’s first word is uttered sometime between the ages of 1 year to 18 months, and for the next few months, the child will remain in the “one word” stage of language development. During this time, children know a number of words, but they only produce one-word utterances. The child’s early vocabulary is limited to familiar objects or events, often nouns. Although children in this stage only make one-word utterances, these words often carry larger meaning. So, for example, a child saying “cookie” could be identifying a cookie or asking for a cookie.

As a child’s lexicon grows, she begins to utter simple sentences and to acquire new vocabulary at a very rapid pace. In addition, children begin to demonstrate a clear understanding of the specific rules that apply to their language(s). Even the mistakes that children sometimes make provide evidence of just how much they understand about those rules. This is sometimes seen in the form of **overgeneralization**. In this context, overgeneralization refers to an extension of a language rule to an exception to the rule. For example, in English, it is usually the case that an “s” is added to the end of a word to indicate plurality. For example, we speak of one dog versus two dogs. Young children will over generalize this rule to cases that are exceptions to the “add an s to the end of the word” rule and say things like “those two gooses” or “three mouses.” Clearly, the rules of the language are understood, even if the exceptions to the rules are still being learned.

5.6 ACQUIRING OF LANGUAGE

Language is a cognition that truly makes us human. Whereas other species do communicate with an innate ability to produce a limited number of meaningful vocalizations (e.g. bonobos), or even with partially learned systems (e.g. bird songs), there is no other species known to date that can express infinite ideas (sentences) with a limited set of symbols (speech sounds and words).

This ability is remarkable in itself. What makes it even more remarkable is that researchers are finding evidence for mastery of this complex skill in increasingly younger children. Infants as young as 12 months are reported to have sensitivity to the grammar needed to understand causative sentences (who did what to whom; e.g. the bunny pushed the frog).

After more than 60 years of research into child language development, the mechanism that enables children to segment syllables and words out of the strings of sounds they hear, and to acquire grammar to understand and produce language is still quite an enigma.

Early Theories
One of the earliest scientific explanations of language acquisition was provided by Skinner (1957). As one of the pioneers of Behaviorism, he accounted for language development by means of environmental influence.

Skinner argued that children learn language based on behaviorist reinforcement principles by associating words with meanings. Correct utterances are positively reinforced when the child realizes the communicative value of words and phrases.

For example, when the child says ‘milk’ and the mother will smile and give her some as a result, the child will find this outcome rewarding, enhancing the child's language development.

Universal Grammar
However, Skinner's account was soon heavily criticized by Noam Chomsky, the world's most famous linguist to date. In the spirit of cognitive revolution in the 1950's, Chomsky argued that children will never acquire the tools needed for processing an infinite number of sentences if the language acquisition mechanism was dependent on language input alone.

Consequently, he proposed the theory of Universal Grammar: an idea of innate, biological grammatical categories, such as a noun category and a verb category that facilitate the entire language development in children and overall language processing in adults.

Universal Grammar is considered to contain all the grammatical information needed to combine these categories, e.g. noun and verb, into phrases. The child’s task is just to learn the words of her language.

For example, according to the Universal Grammar account, children instinctively know how to combine a noun (e.g. a boy) and a verb (to eat) into a meaningful, correct phrase (A boy eats). This Chomskian (1965) approach to language acquisition has inspired hundreds of scholars to investigate the nature of these assumed grammatical categories and the research is still ongoing.

Contemporary Research
A decade or two later some psycho linguists began to question the existence of Universal Grammar. They argued that categories like noun and verb are biologically, evolutionarily and psychologically implausible and that the field called for an account that can explain for the acquisition process without innate categories.

Researchers started to suggest that instead of having a language-specific mechanism for language processing, children might utilize general cognitive and learning principles.

Whereas researchers approaching the language acquisition problem from the perspective of Universal Grammar argue for early full productivity, i.e. early adult-like knowledge of language, the opposing constructivist investigators argue for a more gradual developmental process. It is suggested that children are sensitive to patterns in language which enables the acquisition process.

An example of this gradual pattern learning is morphology acquisition. Morphemes are the smallest grammatical markers, or units, in language that alter words. In English, regular plurals are marked with an –s morpheme (e.g. dog+s).

Similarly, English third singular verb forms (she eat+s, a boy kick+s) are marked with the –s morpheme. Children are considered to acquire their first instances of third singular forms as entire phrasal chunks (Daddy kicks, a girl eats, a dog barks) without the ability of teasing the finest grammatical components apart.

When the child hears a sufficient number of instances of a linguistic construction (i.e. the third singular verb form), she will detect patterns across the utterances she has heard. In this case, the repeated pattern is the –s marker in this particular verb form.

As a result of many repetitions and examples of the –s marker in different verbs, the child will acquire sophisticated knowledge that, in English, verbs must be marked with an –s morpheme in the third singular form.

Approaching language acquisition from the perspective of general cognitive processing is an economical account of how children can learn their first language without an excessive bio-linguistic mechanism.

5.7 CHAPTER SUMMARY

Language is a method of information exchange between people that incorporates the use of words and logical principles to arrange those words. Although communication can take many different forms, not all of them include language. Many species use postures, motions, scents, or vocalizations to communicate with one another. The six elements of language are clarity, economy, obscenity, obscure language or jargon, power and variety. Language is a communication system that includes both a vocabulary and a grammatical system. Language acquisition happens smoothly and effortlessly during the early stages of life, and it happens in a consistent order for people all over the world. Language has a powerful impact on mind, and the topic of how language influences cognition is still being researched and debated in psychology.

5.8 REVIEW QUESTIONS

SHORT ANSWER TYPE QUESTIONS

1. **Define 'language'.**
2. **List the different elements of language?**
3. **Write a short note on Obscure Language/Jargon.**
4. **What do you understand by 'acquiring of language'?**
5. **Write a short note on 'universal grammar'.**

LONG ANSWER TYPE QUESTIONS

1. **Discuss the different elements of language in detail.**
2. **Why should the content and quality of conversational discourse affect the development of understanding about the psychological and natural world?**
3. **Discuss the theories related to language acquisition.**
4. **Describe the different stages of language and communication development.**
5. **How is the relationship between languages traced?**

5.9 MULTIPLE CHOICE QUESTIONS

1. **_____ is a cognition that truly makes us human.**
   a. **Communication**

b. Behavior
c. Language
d. None of these

2. A child's first word is uttered sometime between the ages of _____ and for the next few months.
a. 1 year to 18 months
b. 2 year to 18 months
c. 1 year to 16 months
d. None of these

3. What is the full form of NASDAQ?
a. National Association of Securities Dealers Automated Quotations
b. National Association of Securities Dealers Automatic Quotations
c. National Association of Social Dealers Automated Quotations
d. None of these

4. What is the full form of PET?
a. Positron Emission Topology
b. Post Emission Tomography
c. Positron Emission Tomography
d. None of these

5. What is the full form of IHOP?
a. International House of Plump-cakes
b. International Home of Pancakes
c. International House of Pancakes
d. None of these

6. _____ refers to language choices that are not typically understood or known by most of your audience.
a. Clarity
b. Obscure
c. Jargon
d. None of these

7. _____ language, consists of curse words or pornographic references.
a. Indecent
b. Clarity
c. Obscure
d. Jargon

8. What is the full form of FMRI?
a. Functional Magnetic Resonance Imaging
b. Functional Methodological Resonance Imaging
c. Functional Magnetic Reflective Imaging
d. None of these

9. _____ is a system of conventional spoken or written symbols used by people in a shared culture to communicate with each other.

a. **Actions**
b. **Symbols**
c. **Language**
d. **None of these**

10. **First important element of language is _____.**
    a. **Indecent**
    b. **Obscure**
    c. **Jargon**
    d. **Clarity**

ANSWER KEY

UNIT I

QUESTION	ANSWER	QUESTION	ANSWER
1.	d	6.	b
2.	b	7.	b
3.	b	8.	a
4.	c	9.	c
5.	c	10.	c

UNIT II

QUESTION	ANSWER	QUESTION	ANSWER
1.	a	6.	a
2.	d	7.	b
3.	a	8.	a
4.	b	9.	d
5.	d	10.	c

UNIT III

QUESTION	ANSWER	QUESTION	ANSWER
1.	b	6.	a
2.	c	7.	b
3.	c	8.	c
4.	a	9.	b
5.	a	10.	a

UNIT IV

QUESTION	ANSWER	QUESTION	ANSWER
1	a.	6	d.
2	a.	7	b.
3	a.	8	a.
4	a.	9	c.
5	a.	10	a.

UNIT V

QUESTION	ANSWER	QUESTION	ANSWER
1	c.	6	b.
2	a.	7	a.
3	a.	8	a.
4	c.	9	c.
5	c.	10	d.

Advanced General Psychology II

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