

PSY101 Introduction to Psychology Short Notes for Midterm Exam Preparation

INTRODUCTION:

German philosopher and physiologist **Wilhelm Wundt** set the foundations of modern psychology in **1879**, by establishing the **first psychology laboratory in Leipzig, Germany**.

“Psychology is the scientific study of behavior and mental processes Human or Animal”

Psychologists study animals’ behavior too; to better understand and predict human behavior, the study of animal behavior becomes essential at times, especially because some researches cannot be carried out with humans due to safety reasons or ethical issues

Main goals of psychology are:

- a) Observation,
- b) Description,
- c) Understanding,
- d) Explanation,
- e) Prediction, and
- f) Control of human behavior and mental processes.

Psychology is a science that uses scientific method for gathering knowledge and information.

Scientific method is a systematic and organized series of steps that scientists adopt for exploring any phenomenon in order to obtain accurate and consistent results.

Steps involved in Scientific method: observation, description, control, and replication

“Psychology has a long past, but only a short history.”(Hermann Ebbinghaus, 1908)

Trephining was a procedure whereby a hole was drilled into the skull of a mental patient. This was done in order to let the evil spirits or demons escape from the sufferer’s body.

In 1590, Rudolf Goeckel used the term “psychology”.

This word is the combination of two Greek words “**psyche**” and “**logos**”, the former means the “**soul**” and the later “**discursive knowledge**”. Thus literally, **psychology means the science of soul**.

Aristotle gave a very important place to soul in human life. **Life has no meaning without soul**.

Psychology was also defined as the “**science of mind**”.

Psychology has also been defined as the **science of consciousness** defined by **Wilhelm Wundt**

Modern physiologists and **Watson**, the founder of the behaviorist school of thought, defined **psychology** as a **science of behavior, both of animals and humans**

The new scientific psychology is a fusion of two psychologies, i.e., **philosopher's psychology** and the **sensory psychology**. So basically **Psychology emerged from Philosophy**

POPULAR AREAS OF PSYCHOLOGY:

Clinical Psychology

A branch of psychology concerned with the study, diagnosis, and treatment of abnormal behavior.

It is the oldest as well as the most well known branch of psychology.

Industrial / Organizational Psychology

A branch of psychology that studies the psychology in action at the workplace, including productivity, job satisfaction, and decision-making

Health Psychology

The branch of psychology that explores the relationship of psychological factors and physical illness or disease

Consumer Psychology

A branch of psychology that studies and explains our buying habits and our effects of advertising a buying behavior. Mainly dealt with the likes and dislikes and preferences of people.

Environmental Psychology

A branch of psychology, that focuses upon the relationship between people and their physical environment.

Sport Psychology

The branch of psychology that studies the psychological variables that have an impact upon the sportspersons' performance; e.g. how stress can affect sport performance, how morale can be boosted, the impact of crowd behavior etc.

Forensic Psychology

The branch of psychology that investigates legal issues and psychological variables involved in criminal behavior.

THE GREEK PHILOSOPHERS:

HIPPOCRATES (460-377 B.C.)

Hippocrates was a **physician**, Regarded as the "**Father of Medicine**"
He postulated a theory of "**humors**" that account for the basic human activity.

PLATO (427-347 B.C.)

He was the **first person in history to produce a great all- embracing system of philosophy.**
He developed the **theory of knowledge, theory of conduct, theory of state, and the theory of universe.**

According to **Plato**, the **soul has three parts or components**, which he calls **reason, spirit, and appetite.**

According to **Plato**, when a person moves from **believing to thinking**, he moves from the **visible world to the intelligible world**, from the **realm of opinion** to the **realm of knowledge.**

Plato believed that thinking gives us **knowledge of truth.**

ARISTOTLE (384-322 B.C.)

He was not only a philosopher in the modern sense but he was a **man of universal learning.**
There was no branch of knowledge, which did not receive his attention **except, mathematics.**
It is to him that we owe the **first systematic treatment of psychology.**

His method was two- fold, both inductive and deductive.

He introduced:

- The **first theory of learning**
- **Succession of ideas**
- The **theory that ideas are generated in consciousness based on four principles:**
Contiguity, Similarity, Contrast, Succession

SOCRATES (469- 399)

For him, soul was the essential man.

For him, soul was the capacity for intelligence and character.

It was man's conscious personality. The activity of soul is to know and to direct a person's daily conduct.

The man's greatest concern should be the proper care of his soul so as to make the soul as good as possible.

ALCAMEON: (500 BC)

A **physician**, who performed the **first dissection**

He was interested in philosophy and directed his attention to understanding **perception**

He believed that **sensations and thoughts** occur in the **brain**.

ALCAMEON was known as "**father of Greek medicine**"

He **was the first** to take **anatomical dissection** for **research purposes** and also the **first vivisectionist**.

THE MUSLIM INFLUENCE:

The period which was called **Europe's Dark Age** was the period when Muslim philosophy, science, and knowledge flourished.

Muslims presented the “**humane concept**” of **mental treatment**. Muslim thinkers and philosophers established the **first mental hospital in Spain**

Types of Soul: Man is a compound of body and soul.

Soul is of two types:

Rooh-e –Rabbani: The part of the soul that makes it possible for man to make a connection with God.

Rooh-e-Haewani: Man possesses ‘Nafs’ or the soul. It is the force with the help of which man fulfills all his desires.

Levels of ‘Nafs’: Nafs is divided into three levels:

Nafs-e- Mutmaina: At this stage, the body and soul are in complete harmony. There is no conflict between good and bad and man is satisfied physically, mentally and spiritually.

Nafs-e- Liwama/Nafs-e-Natiqua: At this stage, the conflict between good and bad starts, both positive and negative forces clash with each other. Man is in a state of “do” and “don’t”.

Nafs-e- Ammaraa: At this stage, negative forces have a complete control over the individual. It is the animal tendency of man. All bad habits and wrong doings are due to this Nafs e.g. greed, pride, anger, lust, hatred etc

AL-FARABI (870-950 AD)

- Philosopher and poet
- According to him, **Man is composed of two elements; body and soul**
- Believed in **dualistic nature of Man**
- He was of the view that there exists **no relationship between body and soul**

IBNE- MUSKAVIA (930-1030 AD)

- “**Man is a compound of body and soul**”
- ‘**Rooh**’ is the main factor that **controls our actions** and maintains them
- If ‘**soul**’ rules over the body then person remains mentally healthy but if body rules over the soul then the person becomes mentally ill

IBN-E-SINA/AVICENNA (980-1037 AD)

- A **physician, scientist** and a **philosopher**
- Considered as the great **physicians of ‘Middle Ages’**
- Gave importance to the ‘**sentiments**’ of the individual
- He said, “ **When man is away from God’s love, he is also away from man’s love**”

According to him, there are three kinds of mind:

- Vegetable Mind

- Animal Mind
- Human Mind

IMAM-GHAZALI (1058-1111 AD)

- Believed that 'self' which is called 'Qalb' is the **essence of Man**.
- It is **spiritual entity** residing in human body which **controls the organic & physical functions of an individual**
- 'Self' is the **center of personality** from which all the **psychological phenomena originate**
- He classified the **behavioral mal-adjustments** into the **bodily and spiritual disorders**

According to IMAM-GHAZALI, there are *SIX* powers of "Self":

- Anger
- Impulse
- Apprehension
- Intellect
- Appetite
- Will

Anger is the '**bestly power**' and 'intellect' is the '**Devine power**'.

His method of treatment is called "contradictory treatment" i.e., illiteracy is treated with literacy.

The **therapist** was named 'Sheikh' and **patient** called 'Mureed'.

IBNE ARABI (1165-1240 AD)

Believed in the idea of "WAHDAT- UL WAJOOD" which means that **Man is the part of God himself**

Because **Man is created by God**, so for **mental health**, it is essential that he should **perish himself in the "ZAAT"** of God

MUJADAD ALFANI (1564-1625 AD)

- Supported the idea of "WAHADT -UL-SHAHOOD" means "**REFLECTION OF GOD**" which means that the God's reflection can be seen in the things, which have been created by God.
- A person who is complete in his self and a follower of **Shariat** and **Tareequat** is **mentally healthy**.

SHAH WALI ULLAH (1703-1762 AD)

- **Mentioned about two forces:**
 - I. Bestly Force or Baheemi
 - II. Ar-Rabbani or Devine.
- Both are contradictory forces and are always struggling. This struggle is called "**TAJAZUB**".
- When there is no struggle between these forces, then the individual's condition is called "**ISTALLAH**" (mentally healthy and well balanced).

- But when they are struggling and have conflict, then it is called “**ALLAHIE TAJAZUB**”
(Tendency towards mental illness)
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RAPID DEVELOPMENTS SINCE 17TH CENTURY A.D

RENE DESCARTES (1596-1650 AD)

- His most important work was his attempt to resolve the **mind- body problem**, an issue that had been controversial for centuries.
- He saw **human body** as a **piece of machinery**; difficult and complicated.
- Mind-Body “**Interactive Dualism**”: mind and body are separate entities influencing each other
- Nerves are hollow tubes through which “**Animal Spirits**” conduct “**Impulses**”

FRANZ JOSEPH GALL (1758-1828 AD)

- Known for his work on **phrenology**
- He postulated the idea that **particular psychic functions** are represented by **particular areas of the brain**.
- Intelligence, moral character and other personality characteristics can be distinguished by the shape of, and the number of bumps on, a person’s skull.

JOHN LOCKE (1632-1704 AD)

His **major contribution** to psychology was an **essay concerning human understanding**, which appeared in **1690** and was the conclusion of some 20 years of study and thought; it was later considered as the formal beginning of **English/British Empiricism**.

His **primary question** was **how the mind acquires knowledge?**

Locke, gave the concept of “**Tabula Rasa**”; People are born in this world with empty minds i.e. “**Tabula Rasa**” or a **blank slate**. The ideas and memories are imprinted on our minds as a result of experience.

SCHOOLS OF THOUGHT

STRUCTURALISM

Focused on studying the conscious experience by looking into its individual parts or elements
Analyze consciousness into basic elements and study how they are related.

A method used to study the 'structure of the mind' was called "**INTROSPECTION**" (Self-observation of one's own conscious experiences)

FUNCTIONALISM

Focused on what the mind does and how it does.

Investigate the function, or purpose of consciousness rather than its structure.

This school founded by the American psychologist **William James**, became prominent in the **1900s**.

Emphasized "function" rather than "Structure" of human consciousness i.e., what the mind does

John Dewey: Famous American educator. One of the key founders of "Functionalism"

GESTALT PSYCHOLOGY

Focused on studying the whole experience of a person rather than breaking it into individual components

'The whole is different than the sum of its parts'

In contrast to the structuralist approach of breaking down conscious experience into elements, or focusing upon the structure, the Gestalt emphasized the significance of studying any phenomenon in its overall form.

The word gestalt means "**Configuration**"

Three German psychologists Max Wertheimer, Kurt Koffka and Wolfgang Kohler were regarded as the founders of gestalt school

BIOLOGICAL MODEL

The psychological model that views behavior from the **perspective of biological functioning**

The role of brain, genes, neurotransmitters, endocrine glands etc

PSYCHODYNAMIC MODEL

Focuses on the unconscious forces that drive/ motivate human behavior

This approach concentrates on belief that behavior is motivated by the inner forces over which individuals have little control. It was founded by the **Viennese physician Sigmund Freud** in **early 1900s**.

COGNITIVE MODEL

The psychological model that focuses on how people know, understands, and thinks about the world.

Cognition: The mental processes involved in acquiring, processing, storing & using information
Cognition means “the known”, “knowledge”, or “the process of knowing”

BEHAVIORAL MODEL

Focuses on studying the behavior that is observable and overt

The behaviorists relate overt behaviors (responses) to observable events in the environment (stimulus)

John B. Watson was the first person to advocate the behavioral approach.

HUMANISTIC MODEL

The psychological model that suggests that people are in control of their lives

Humanistic perspective emphasizes the unique qualities of humans especially their freedom & their potential for personal growth. Humanists take an optimistic view of human nature

GENERAL INFORMATION ABOUT PSYCHOLOGIST:

James Mckeen Cattell: Known for his work on individual differences and “**Mental Tests**”

Emil Kraepelin: Postulated a **physical cause of mental illness**, in **1883**, he gave **first classification system of mental disorders**

Hugo Munsterberg: First to apply psychology to **industry and law**

Edward B. Tichener:

Known as the formal founder of **Structuralism**

American psychologist, English by birth, which spent his most productive years in Cornell University, New York

He believed that we can study perception, emotions and ideas through introspection, by reducing them to their elementary parts

There are **four elements** in the **sensation of taste**: sweet, sour, salty and bitter

Ideas and images are related.

Max Wertheimer: The founder of Gestalt psychology, born in Prague in 1880

Phi phenomenon = When two lights are in close proximity to each other, flashing alternately, they appear to be one light moving back and forth; therefore the whole was different from the separate parts; movement perceived whereas it never occurred

We perceive experiences in a way that calls for the simplest explanation, even though reality may be entirely different; this is **Gestalt Law of Minimum Principle**.

Kurt Koffka

Wrote the famous “**Principles of Gestalt Psychology**” (1935)

Talked about geographical versus behavioral environment

Wolfgang Kohler

Gave the concept of “**insight**” and “**transposition**”, as a result of his observations of a caged chimpanzee and experiments with chickens

- Insight = spontaneous restructuring of the situation
- Transposition = generalization of knowledge from one situation to another
- Kohler also talked about Isomorphism; changes in the brain structure yield changes in experiences

Galen (129-199 A.D): Born to Greek parents in Asia Minor. Known for anatomical studies on animals and observations of human body functions

Julien Offroy De La Mettrie (1709-1751 Ad): French priest turned physician

Cabanis: French physician

Philippe Pinel (1745-1826 Ad): French physician

Wilhelm Griesinger (1817 – 1868 Ad): German psychiatrist

Paul Broca (1824-1880): French surgeon and anthropologist, Discovered speech center in brain

Emil Kraepelin (1856-1926 Ad): German psychiatrist. Stressed the likely physical cause of mental illness

Charles Darwin: (1809-1882 Ad): British scientist, Author of the revolutionary “The Origin of Species” (1859), gave the concept of “**Survival of the Fittest**”

IMPORTANT TOPICS & TERMS

Neurotransmitters: The synapse of the neuron releases special chemicals called “**neurotransmitters**”

Neurotransmitters and Their Role:

- **Acetylcholine:** Learning, Memory and Muscle control
- **Dopamine:** Motor activity, Coordination, Emotion and Memory
- **Epinephrine:** Emotion, Stress
- **GABA (Gamma-Amino Butyric Acid):** Anxiety, Arousal, Learning
- **Serotonin:** Sensory Processing, Sleep, Arousal
- **Glutamate:** Anxiety, Mood

“**Pharmacology** is the science of the study of drugs to treat a wide range of less severe psychological disorders”

1. **Narcosis:** The word “Narcosis” is derived from the Greek word meaning, “**be numb**”
2. **Chemotherapy:** It is the type of therapy that treats mental and behavioral disorders with drugs and chemicals

Tranquilizers: Drugs that produce soothing and calming effects

Energizers: They are used with the sufferers of depression who are not helped by sedatives

THE PSYCHODYNAMIC APPROACH/ MODEL: The approach that concentrated on the unconscious forces that drive our behavior; belief that the inner forces over which individuals have little control motivate behavior.

Founded by **Sigmund Freud**

- He was founder of psychoanalysis.
- Austrian physician, neurologist, psychologist.
- In 1895: wrote “**Studies on Hysteria**”

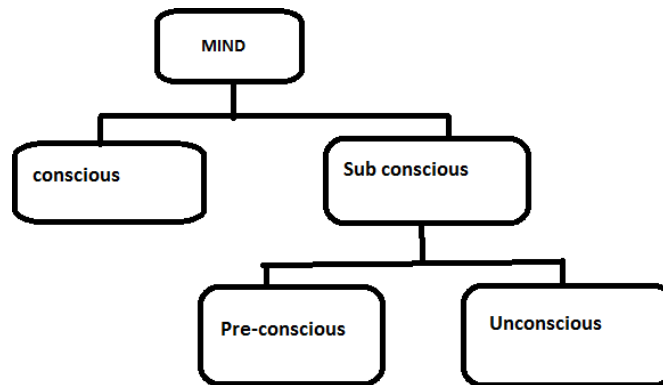
Structure of Consciousness

Conscious: Contains thoughts and feelings of which one is immediately aware

Subconscious: Mind level below the level of conscious awareness

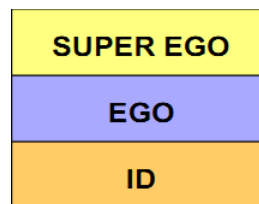
Preconscious: Part of the sub conscious that can be accessed by deliberate choice

Unconscious: Part of the sub conscious that cannot be accessed directly although impulses, ideas, and feelings may permeate out through other sources e.g. dreams, slips of tongue etc.



Sources of motivation

Psychodynamic Model of Personality Is a three-part structure of the mind; Id, ego and super ego.



Id

At birth, the entire mind consists of only id. It consists of pure, unadulterated, instinctual energy and exists entirely on the unconscious level. It is the source of basic drives; operates under the 'pleasure principle' i.e., it wants immediate gratification of needs.

The id has two means of satisfying bodily needs, reflex action and wish fulfillment.

Reflex action is responding automatically to a source of irritation .e.g. an infant may sneeze in response to an irritant in the nose. In such case, reflex action is effective in reducing tension. Coughing and blinking are other examples of reflex action.

Wish- fulfillment is more complicated. It is the illusion of an image of an object or event that is capable of satisfying a biological need e.g. a hungry person thinks of food- related objects.

Ego

Mediates the link of the self with the outside world, “Real World”, as well as between the id and superego; operates under the demands of the environment. The ego comes into existence in order to bring the person into contact with experiences that will truly satisfy his/ her needs. When the person is hungry, the ego finds food, when the person is thirsty, the ego finds liquid. The ego goes through reality testing to find appropriate objects.

Super Ego

There is a third component of personality that makes things much more complicated, i.e. super ego. It is governed by the moral constraints. It develops from the internalized patterns of reward and punishment that the young child experiences i.e. Depending on the values of the parents, certain things the child does or says are rewarded and encouraged and others not liked are punished or discouraged.

Anxiety

- An emotional state experienced as a result of felt threat to the self
 - Anxiety arises when ego cannot cope too much of:
 - i. Demands of the id
 - ii. Demands of the ego
 - iii. External danger
 - In order to protect itself against anxiety and threat, ego uses **defense mechanism**
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DEFENSE MECHANISMS

- i. **Repression:** Blocking unpleasant/unacceptable thoughts by pushing them into the unconscious e.g. forgetting events of the painful childhood.
- ii. **Regression:** Reverting back to a stage that was satisfying e.g. a boss showing temper tantrums like a child; or acting like a baby.
- iii. **Displacement:** Redirecting the expression of unwanted desires or impulses to a substitute rather than the actual target e.g. beating children when a wife cannot express anger toward husband.
- iv. **Rationalization:** In order to justify one's behavior, one develops a socially acceptable explanation or reasoning e.g. going for a second marriage saying that the first wife was quarrelsome.
- v. **Denial:** Refusing to acknowledge or accept anxiety provoking thoughts or impulses e.g. being a heavy smoker but saying 'I am an occasional smoker'.
- vi. **Projection:** Attributing unwanted thoughts and impulses to others e.g. a person takes bribe and blames the organization for paying him not enough salary.
- vii. **Sublimation:** Converting unwanted impulses into socially approved thoughts, feelings and actions e.g. disliking the in-laws but behaving in a very friendly manner.

Psychotherapy: Psychoanalysis

- An intensive, long-term psychotherapeutic procedure.
- Requires long sessions over extended periods----- may be years.
- Better suited to intelligent individuals.
- Involves a special relationship between the therapist and the patient.
- **Target:** To explore unconscious motivation, conflicts, desires.
- **Goal:** Establishing intra psychic harmony by developing awareness of the role of the id, reducing over compliance with super ego, and by strengthening the ego.
- **Understanding of 'repression':** The therapy gives central importance to the understanding of the manner in which the person uses repression for handling conflict.

Stimulus: A physical energy source that has an effect on a sense organ, thus producing a response

Response: The action, behavior, or reaction triggered by a stimulus.

Environment: External factors, variables, conditions, influences, or circumstance affecting one's development or behavior.

Variable: A behavior, factor, setting, or event that can change / vary in amount or kind.

Learning: A relatively permanent change in behavior that takes place as a result of practice and/or experience.

Shaping: Successive approximations of a required/desired response are reinforced until that response is fully learnt

Stages in Shaping:

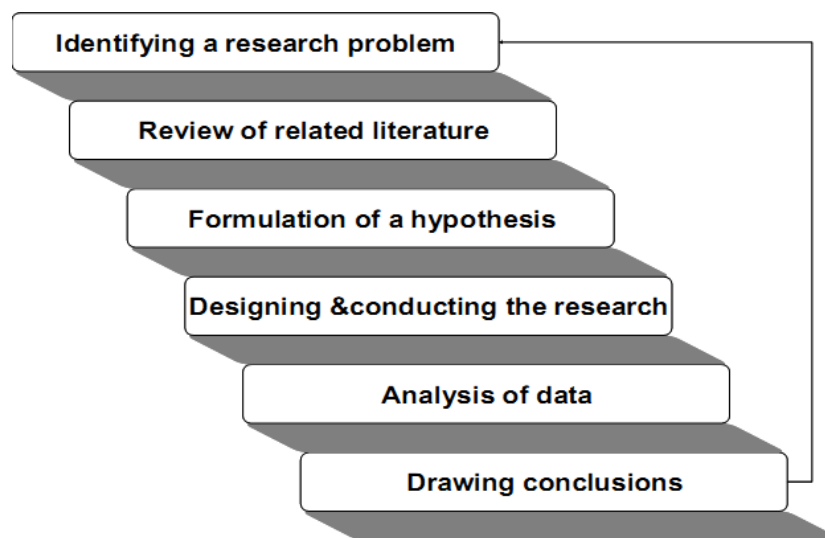
1. **Acquisition**: Initially the response rate following reinforcement may be slow but at one stage it increases to the maximum.
2. **Extinction**: If reinforcement is withheld the response rate decreases and finally no response is shown.

Shaping Can Best Be Used For:

- Learning alphabets, vocabulary, mathematical tables, or a new language.
 - Learning to play a musical Instrument.
 - Appropriate classroom behavior.
 - Training mentally handicapped children.
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STEPS OF SCIENTIFIC METHOD IN PSYCHOLOGY

- 1. Identifying the research problem:** The research problem can be identified in many ways, including personal interest, brainstorming, scientific developments, knowledge etc.
- 2. Review of the related literature:** In order to see how others approached the same or similar issues.
- 3. Formulation of hypotheses:** A hypothesis is a speculative statement about the relationship between two or more variables. Reviewing the related research articles helps one formulate various hypotheses.
- 4. Designing and conducting the research:** After reviewing the related literature and making hypotheses, the research is conducted by using different strategies such as Questionnaires, mail interviews, telephonic interviews, face to face interviews etc.
- 5. Analysis of data:** After collecting information, the data will be tabulated with the help of statistical methods and computation in order to see whether the finding prove or disprove the hypotheses.
- 6. Drawing conclusions:** Conclusions are drawn after the statistical analysis of data. On the basis of this, a decision is made about the rejection or acceptance of the hypothesis.



RESEARCH METHODS IN PSYCHOLOGY:

1. **Observation:** Systematic observation is used. Phenomenon of interest is observed, studied, and the observations are recorded. The recorded observations are analyzed. Conclusions are drawn on the basis of analysis. **Types of observation:** Observation without Intervention, Observation with Intervention

2. **Correlation Research:** A method used for identifying predictive relationships among naturally occurring variables

3. **Surveys:** Surveys are used when quick information is required in limited time e.g. opinion polls, product preference

Sources of data/information in Surveys

- **Questionnaires:** in person, mailed, internet
- **Interviews:** personal, telephonic
- **Newspaper Surveys**

Five Steps involve in conducting the Survey:

Conceiving the problem: The purpose of the study. How is the information to be used? What kind of information to be gathered etc

Designing the instrument: There are numerous ways by which information can be gathered from the general public such as mailed questionnaires, telephonic interviews, through internet etc

Sampling the population: With this procedure, each age, sex, income, religious and ethnic group in the population will be proportionately represented in the sample

Conducting interviews: Experiments have shown that females are the best interviewers: at least 21 years of age, who like people, who are unbiased, who are good listeners, who have some college education, and who are fairly familiar with the section they are working in.

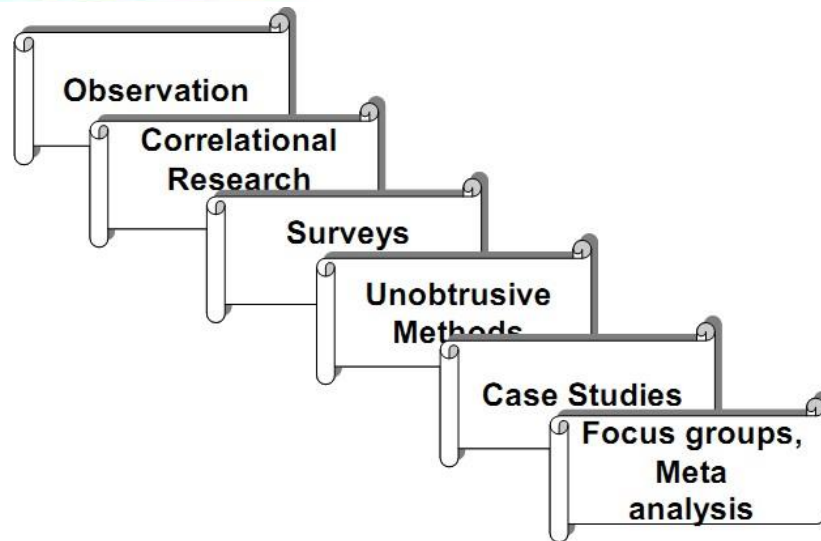
Interpreting the results: When all the findings are carried out properly, there is always a chance of misinterpreting the results. Errors in questionnaires, statistical methods, and investigator's own subjectivity can easily bias the results. So be careful about that.

4. **Unobtrusive Measures of Behavior:** Indirect ways of data collection, The person/s who are the focus of interest may not be present at the time of investigation.

5. **Content Analysis:** The analysis may cover contents of live human behavior, books, journals, magazines, poetry, drama, movies, folktales, TV programs, school textbooks and curricula, advertisements etc

6. **Focus Groups:** A variety of interviews conducted in a group setting

7. **Meta Analysis:** A statistics based method



Development: “The process of growth and differentiation”

Developmental Psychology: The branch of psychology that studies how growth and physiological/ psychological/ social changes take place over the life span

Nature versus Nurture

- Nature means hereditary influences.
- Nurture refers to environmental influences, in child development.

Limitations of Nature-Nurture Research:

- Ethical considerations in research with humans
- Not all animal research can be applied to humans

Genes: parts of chromosome that are the transmitters of inheritance.

Genes may be **dominant or recessive;** a dominant gene means that its characteristics will dominate those of the recessive one e.g. if father has brown eyes and mother has black eyes, and if the father’s genes dominate then the baby will have brown eyes.

- The **zygote** contains **23 pairs of chromosomes**
- Deoxyribonucleic Acid (**DNA**)

Prenatal Stages:

Embryo: A developed zygote with a heart, a brain and other organs.

Fetus: A developing child; 9 weeks after conception till birth.

Genotype: genetic composition of a person.

Phenotype: observable characteristics.

Alleles: This difference in color is due to the fact that genes come in alternative forms called “Alleles” (alternative forms of a gene).

When alleles are identical, a person is **homozygous** for a trait;

When alleles are dissimilar the person is **heterozygous.**

Anthropologists: Focus on, and measure, how cognition develops in different cultures.

Sociologists: study how cognitions are acquired and used in various groups and institutional settings.

Computer scientists: Target to create ‘artificial intelligence’.

Biological Bases of Behavior

The Nervous system: The system that controls and regulates the structure and function of the brain, spinal cord, nerves, and the nerve cells; it maintains coordination between the nervous system and the rest of the bodily systems

Endocrine Glands: These glands form the body’s “slow” chemical communication system; a set of ductless glands that secrete hormones (special chemicals) into the bloodstream”

Central Nervous System (CNS): The system that controls and regulates the structure and function of the brain, spinal cord, nerves, and the nerve cells; it maintains coordination between the nervous system and the rest of the bodily systems.

Peripheral Nervous System (PNS): Consists of the spinal and cranial nerves; these connect the CNS to the rest of the body. PNS connects the body's sensory receptors to the CNS, and the CNS to the muscles and glands.

Neuron: A nervous system cell is constituted in such a way that it is specialized in receiving, processing, and/or transmitting information to other cells.

The Brain

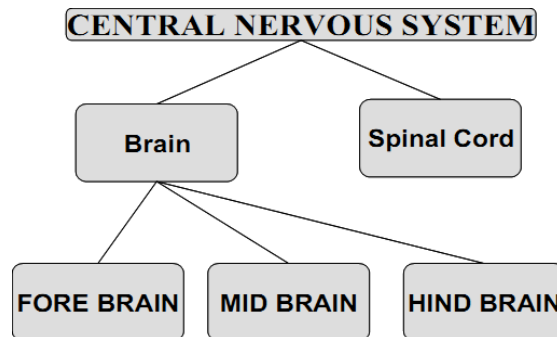
- The center of the nervous system.
- The vital organ that is responsible for the functions of seeing, hearing, smelling, tasting, thinking, feeling, remembering, speaking, dreaming, information processing, and a lot more.

Structure of Brain

- The deeply grooved structure lies safely and securely in our skull.
- The average adult human brain weighs 1.3 to 1.4 kg (approx. 3 pounds).
- If you look at it from the outside the brain is pinkish gray in color; soft, spongy, and mottled.
- The brain contains billions of nerve cells (neurons) and trillions of "support cells".

The brain is made of three main parts:

- Fore brain
- Mid brain
- Hind brain



Electroencephalogram (EEG): An apparatus/machine that measure records and displays electrical activity within the brain of a person.

Magnetic Resonance Imaging (MRI): The scan produces a powerful magnetic field to provide a computer generated, detailed image of the structure of the brain.

Super Conducting Quantum Interference Device (SQUID): a scan sensitive to minute changes in the magnetic field occurring when neurons are firing.

Positron Emission Tomography (PET): a scan showing biochemical activity within the brain at any given moment.

Cerebellum:

- "Cerebellum" comes from the Latin word for "little brain". The cerebellum is located behind the brain stem.
- It carries 10% of the weight of the brain.
- It contains as many neurons as in the rest of the brain.
- Its function is to coordinate body movements i.e. coordination, maintenance of posture & balance.

Cerebrum: Largest part of the human brain, associated with higher brain functions such as thought and action.

Cerebrospinal Fluid (CSF):

A clear, colorless fluid covering the entire surface of central nervous system

Endocrine system is a collection of glands that produce hormones that regulate body's growth, metabolism, and sexual development and function. The hormones are released into the bloodstream and transported to tissues and organs throughout the body.

Endocrine glands are known as the "**Managers of Human Body**"

Sensation: Sensation is a process that makes possible, and facilitates our contact with reality.

'To sense' means to become aware of something.

The five senses:

- Vision
 - Hearing/ Auditory sense or Audition; also associated with maintenance of bodily balance
 - Smell/ Olfaction
 - Taste
 - The skin sensations/ Kinesthetic sense; touch, pressure, temperature, and pain
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VISION:

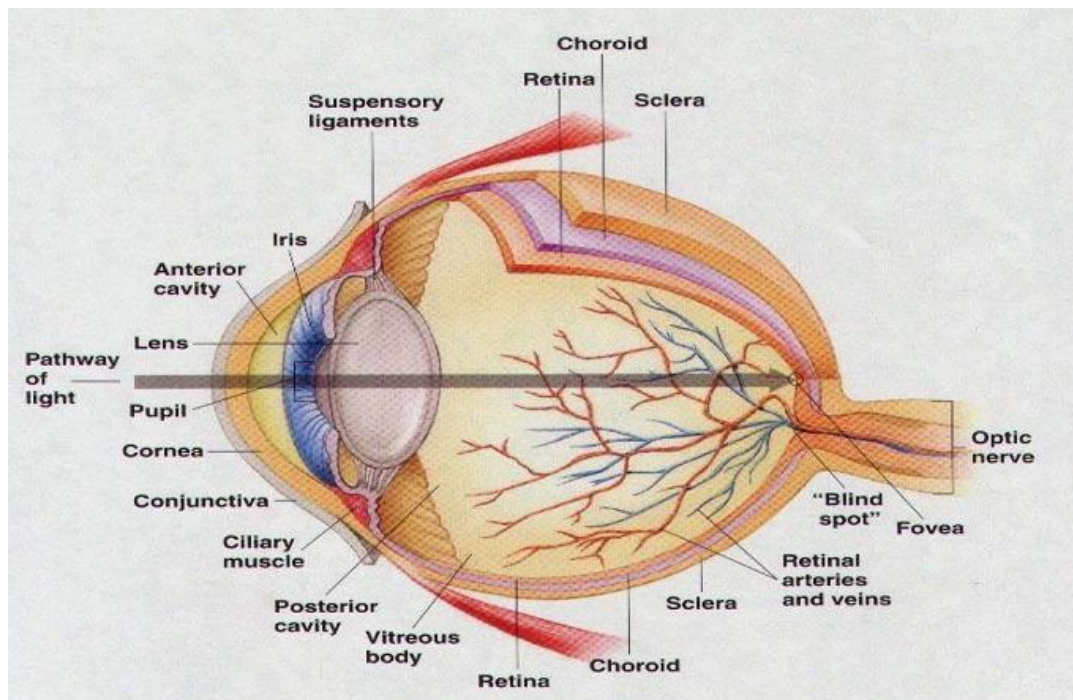
The Human Eye:

Cornea: A transparent external surface, five-layered membrane that covers both the pupil and the iris.

Sclera: Outer walls of the eye are formed by a hard, white substance called 'sclera', hence sclerotic coat that covers 5/6th of the surface of the eye.

Pupil: A dark, adjustable opening in the center of the eye through which the light enters. It changes its size as the amount of light entering the eye varies

Iris: Around the pupil of the eye, there is a ring of muscle tissue that controls the size of the pupil opening, through its contraction and expansion



Lens: The transparent part of the eye that is located behind the pupil that changes its shape in order to focus images on the retina. The lens changes its own thickness in order to focus images properly on the retina; this ability of the lens is called “**accommodation**”

Eye has three important layers or chambers:

- i. Anterior layer that lies between the cornea and iris
 - ii. Posterior layer that lies between the iris and lens
 - iii. Vitreous layer that lies between the lens and the retina
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HEARING:

Ear is regarded as the organ of hearing.

Some Interesting Facts about Hearing:

- Animals have the capability of hearing more sounds than humans
- Dolphins have the best sense of hearing among all animals
- When people go up high in the mountains, the changes in pressure cause the ear to pop
- Babies can get ear aches because of the milk deposit in the Eustachian tube, which helps the bacteria to grow there and may cause problems later in life
- Children can hear more noises than adults, as their ears are more sensitive than that of adults
- Ear aches result when too much fluid causes pressure in the eardrum___often occur due to allergies, virus or some sort of infection

The Human Ear: Anatomy/ Structure:

The primary apparatus of hearing i.e., the ear is divided into three parts

1. The outer ear: The outer ear serves the function of collecting the sound waves from the environment to the internal portions of the ear. It is shaped like a reverse megaphone

Auditory Canal: When sound waves originate from the vibrating object, they then pass through the auditory canal, which is a tube like passage through which the sound travels to the inner part of the ear or “ the eardrum”.

Eardrum:

- The part of the ear that starts vibrating when sound waves strike/ hit it.
- Its intensity of vibration is dependent on how intense the sound waves are___the more intense the sound, the more intensely it vibrates.
- These vibrations are then transmitted to the “middle ear”.

2. The middle ear:

- A tiny chamber between the eardrum and cochlea containing three bones ---- the hammer, the anvil, and the stirrup, which transmit vibrations to the oval window
- These three bones have only one function, i.e. to convey/ transmit the message to the inner ear.

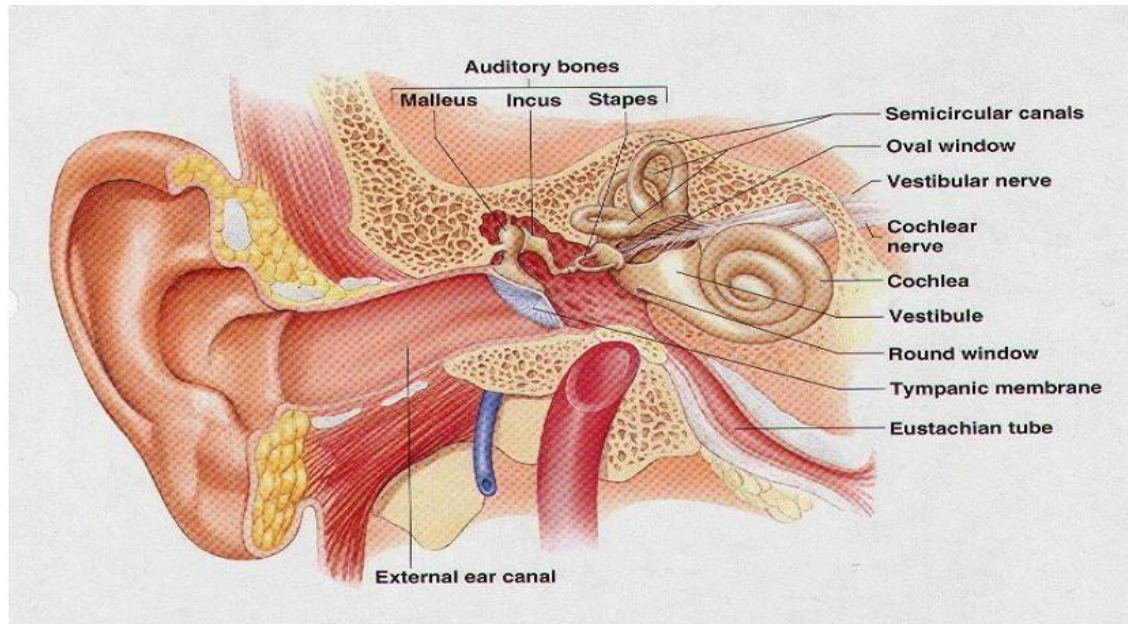


Oval Window:

- A membrane between the middle and the inner ear that increases the strength of the stimulus (vibration) while transmitting them.
- Serves as the amplifier so that tiny or hiss voices could be heard, which otherwise may remain unnoticed.

3. The inner ear:

The innermost region/ part of the ear that contains important structures such as cochlea, semi circular canals and vestibular sacs, and that changes/ transforms the sound waves into the neural impulse.



Frequency: Is the prominent feature/ characteristic of sound and refers to the number of complete wave lengths that occur or pass a point in each second.

Pitch: Primarily related with the frequency and refers to the quality of sound that is being produced by the frequency of the sound wave; expressed in cycles per second.

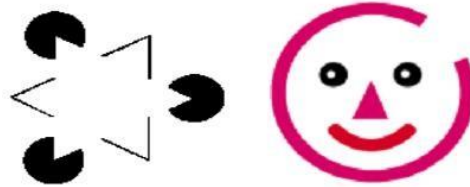
Timbre: Quality of sound determined by the complexity of sound waves

PERCEPTION

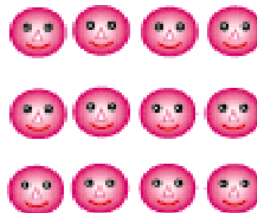
Perception: The ability to process or use information coming/received from the senses.

Gestalt Laws of Perceptual Organization

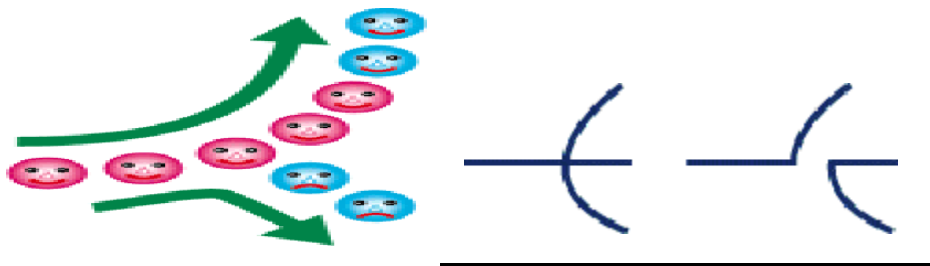
The Law of Closure: It is the perceptual tendency to fill in the gaps and completing the line; enables us to perceive the disconnected parts as the whole object.



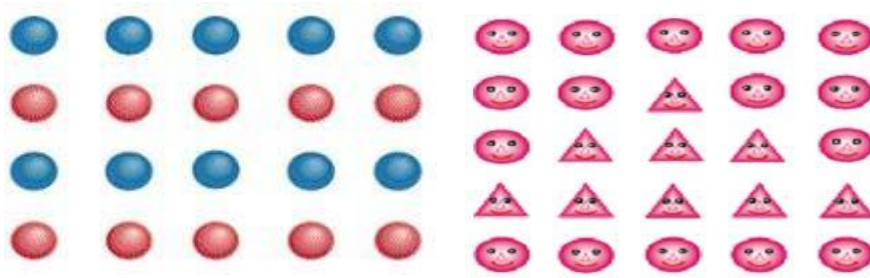
The Law of Proximity: Close or nearer objects are perceived as coherent and related.



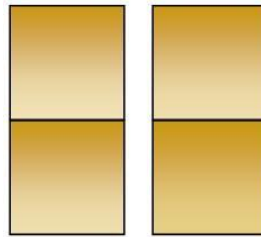
Law of Continuity/Good Continuation: Tendency to group the stimuli into smooth and continuous patterns or parts.



Law of Similarity: Tendency to perceive objects, patterns or stimuli as groups, which are similar in appearance



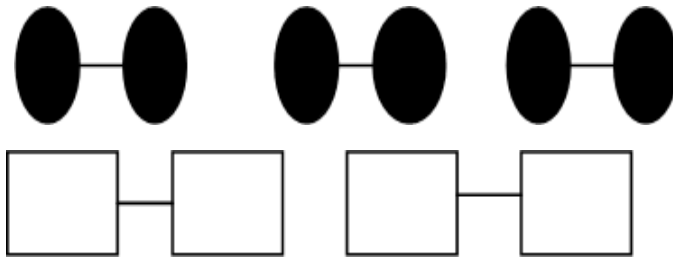
Law of Simplicity: People intuitively prefer the simplest, most stable, straightforward, and basic form of possible organizations.



Law of Common Fate: It is the tendency to group together the objects that move together, or seem to move together, and in the same direction.



Law of Enclosure/ Connectivity: It is our perceptual tendency to perceive features/ patterns, such as dots or objects as a single unit when uniform and link; lines, dots, areas, objects etc are perceived as single or same unit when combined or linked.



Feature Analysis: The process of perceiving a shape, pattern, object, or scene by attending to the individual elements making it up.

Steps in Feature Analysis:

- a. Identify the feature, shape of any object, of which the image falls on the retina.
- b. Combine/ gather object in some form/pattern so that some sort of representation can be formed.
- c. In the final stage, we identify/ compare each component/element/ object with the help of past experiences or memories.

Depth Perception:

Depth perception is the perceptual tendency/ ability to see objects in three dimensions, although the image that falls on the retina of the eye is two-dimensional; thus enabling us to perceive distance.

“Depth Perception” is the skill to perceive depth and distance e.g. we are able to judge the distance of the incoming car, height of the cliff or of a roof top, size of an object, weight of a sand bag etc, in a glance, just by having a look at it.

This sort of perception is largely due to the fact that we have two eyes which are slightly distant from each other, so the brain integrates the two slightly different images and combines them into one consolidated view; However the differences in images or 'Binocular Disparity' is not ignored by the brain. Eleanor Gibson and Richard Walk discovered these phenomena in 1960 by using the miniature cliff with a drop-off covered by sturdy glass.

Motion Parallax: The change in the position of the retinal image with the side-to-side movement of the head; providing a cue to the distance.

Occurs when objects are at different distances and we are also moving at different rates when in motion.

A **binocular cue** for depth perception that illustrates, that when we assume that the two objects are of same size, the one that produces a relatively smaller image will be perceived as distant

Selective Attention:

Perceptual process in which the person chooses the stimulus which he is interested in; paying attention to only the stimulus of interest

Dichotic Listening:

- A procedure in which individual wears earphones in which different messages are sent to each ear at the same time.
- After hearing the stimuli, the individual is asked to reproduce them aloud as it comes to one ear: "shadowing".
- In this process, individual can easily identify the talking person as man or woman and whether change in voices takes place during the message or not.

Form-Perception:

- A perceptual phenomenon in which we perceive the shape, form or pattern of any object _____ give name to objects as house, tree, table, chair etc

Mainly it involves two important principles:

- Figure- ground relationship
- Contours

Figure- Ground Relationship:

Our perceptual tendency to see objects with the foreground as well as the background_ the object is being recognized with respect to its back ground e.g. Black board and chalk, painting against the wall etc. It is a vise- versa relationship i.e., figure cannot be observed without a ground and ground cannot be recognized without having a figure.

Contours:

Perceptual phenomenon in which we are able to maintain a difference of the form from its background due to the perception of contours e.g. In observing the paper, which has two colors, white and black there is no contour at all. But as it becomes lighter rather than becoming dark, a person can simply identify the difference. And when the difference is much

apparent, we simply divide into two parts as light and dark and skip different shades as lighter or darker ____ where brightness changes suddenly, we perceive contours.

Motion Perception: Motion simply means the relative/ progressive change in the position of the person in space with time. Objects cannot be perceived fully when in motion. It is also difficult due to the fact that our eyes cannot follow the moving object with great precision and efficiency all the time.

Relative Motion: While looking at moving automobiles, the ones that are nearer seem to be moving more rapidly than those at a moderate distance, and those that are more distant seem to be moving along. Relative motion can also be interpreted through experience, when one can fairly tell the speed of a train or a bus by noticing outside the window as to how rapidly the nearby objects are passing.

Radical Motion: A movement directly towards or away from the observer. Continuous and radical motion is being perceived when the retinal image continuously changes. The change in size of the retinal image gives the perception of motion.

Perceptual Constancy: A perceptual tendency to perceive object as unchanging in size, shape, color, lightness etc., even though changes in illumination and retinal image do take place

Lightness Constancy: object's lightness or brightness remains the same in spite of changes in illumination.

Color Constancy: color of the object remains the same in spite of changes in lighting conditions

Shape Constancy: Means the shape of the object remains the same in spite of some changes in its orientation.

Size Constancy: refers to our ability or tendency to perceive objects as remaining of the same size despite having distance from the observer

Visual Illusion

Also known as optical illusion. Illusion is misperception, or false perception.

It is when the physical stimulus constantly and persistently produces error in perception

Muller- Lyer Illusion: The visual illusion in which the two lines of the same lengths appear different because of the change in position of arrows at each end of two lines __arrows pointing out appear shorter than the arrows pointing inwards.

Causes of Illusions

- Sensory deficits and defects
- Readiness and expectation
- Atmospheric variables
- Effect of drugs
- Artistic manipulation
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Consciousness: The awareness of the sensations, thoughts, feelings and emotions, events, and surroundings that are experienced by a person.

Varied States of Consciousness

- Sleep
- Dreaming
- Hypnosis and Meditation
- Drug induced states

Sleep

- A state of total or partial unawareness ranging from slight wakefulness to light tranquility, to nearly total detachment from the external world.
- Sleep is the time of rest and rejuvenation for the body.
- The muscles and the nerves relax.
- The body recharges its energy for the hours of work to come the next day.
- Sleep Stages: Stage-1, Stage-2, Stage-3, Stage-4

REM: Rapid Eye Movement Sleep

- Occurs during stage-1 sleep
- Eyes move back and forth
- Sleep is very deep and the major muscles seem as if paralyzed
- Difficult to wake up the person during REM sleep.
- Usually people dream during REM.
- It is thought that eyes move back and forth during REM because they are following the action-taking place in dreams.
- REM sleep plays an important part in a person's life, both physical and psychological, as the body needs a certain amount of REM sleep.
- Experiments have shown that people whose REM sleep was interrupted and disturbed by being awakened, exhibit a rebound effect.

Sleep Deprivation Effects:

- Sleep deprivation in humans as well as animals has adverse effects although temporary
- Sleep deprivation affects all faculties, mental and physical: causes fatigue, and irritability; concentration and logical thinking are adversely affected.
- Reaction time is slowed.
- Sleep Deprivation may have serious consequences in case of academic performance, automobile driving, and certain professions requiring sharp alertness of mind and body.

Sleep Disorders

Sleep related problems ranging from inability to sleep, to difficulty falling to sleep, to interrupted sleep, to feeling sleepy even when one has had enough hours of deep sleep; Generally known by the name of Insomnia, sleep disorders include sleep walking and sleep talking as well.

Causes of Sleep Disorders

- Stress
- Preoccupation (concern or fear etc.)
- Mental illness
- Noise pollution
- Digestive problems
- Physical illness
- Drug abuse and medication
- High caffeine intake and many other

Practical Steps for Getting Rid of Most Sleep Problems

- Avoid taking sleeping pills.
- Fix a place/room where you will go to sleep every night, and do not do anything else over there.
- Keep television away from your sleeping place, and if it is there NEVER EVER watch an interesting movie or program at sleep time.
- Develop a habit of reading at bedtime, but NEVER EVER read an interesting or exciting book.
- If you are in your bed and still can't go to sleep, then get out of the bed and take a round around the house and come back. Develop a habit of rising early in the morning every day, at the same time.
- Do not change your sleep time.
- Learn some relaxation exercises.
- Avoid caffeine.
- Avoid heavy meals at night, and eat your dinner about two hours before bedtime.
- A glass of warm milk helps quite often.

Dreams and Sleeping

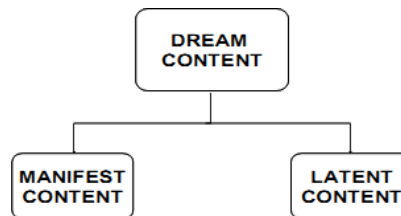
- Dreams are mental experiences during sleep.
- Every body dreams though they may forget the contents.

Dreams in Freudian Approach: Dreams reflect unconscious needs, desires, and impulses.

Dreams have two levels of dream content: manifest and latent.

Manifest content: The obvious, apparent part: what a dream appears to be to the dreamer.

Latent content: The dream's true meaning, which is usually disguised or distorted by dream work.



Hypnosis

- A condition in which the person is in a highly suggestible state.
- Following a number of instructions by the hypnotist, the person enters a trance and follows the suggestions or further instructions without resistance.
- The instructions are followed even after the person is out of the trance.
- However, a hypnotic state does not mean total loss of will; people may not follow instructions that clash with their moral/ethical ideology.
- It is primarily a varied state of consciousness in which one is not fully awake.

Why Do People Go For Hypnosis?

People may choose hypnosis as a therapy for various reasons:, e.g. for:

- Quitting smoking
- Quitting alcohol
- Pain management
- Assertiveness training/overcoming shyness
- Improving sport performance
- Treatment of psychological problems (fears/ phobias)
- Eating Disorders
- Recalling events

How Effective Is Hypnosis? There is no conclusive evidence available in this regard.

Meditation

- The person learns (after instruction) to refocus attention and to concentrate in such a way that he/she is totally detached from all the unwanted stimulation for as long as he/she desires.
- For focusing attention a word, syllable, or sound may be repeated e.g. the way we do in transcendental meditation (TM).
- In some forms of meditation some object e.g. a marble, crystal, candle flame, or picture may be used
- The main idea is to concentrate.

Physiological changes due to meditation

- Decreased heart rate
- Lowered blood pressure
- Lessened oxygen usage
- Changed brainwave pattern

How does meditation affect?

- It gives a heightened feeling of relief and relaxation.
- Concentration is sharper.
- Insight is improved and problem solving better.
- It has a positive effect on health, and in some studies longevity has been found to be associated with prolonged practice of TM.

Drug Induced States: Changes in consciousness due to use/abuse of different drugs.

Psychoactive drugs:

- Drugs that affect behavior and mental processes including cognitions, emotions and perceptions.
- More deep rooted and adverse effects are caused by the addictive drugs; drugs causing dependence.

Effects of Drugs

- Withdrawal effects
- Overdose effects

Categories of Drugs

- Stimulants
- Depressants
- Narcotics
- Hallucinogens

Why do people take drugs?

- Addiction
- Role modeling

- Peer pressure
 - Stress/ Relaxation
 - Thrill/Excitement/Experimenting
-

Learning: A relatively permanent change in behavior that takes place as a result of practice and/or experience.

Learning usually refers to improved performance, acquisition of skills, and a positive change in behavior; however the change may also be negative in nature

There are varieties of learning:

i. Verbal learning: Basically man is a verbal learner who learns about the environment through experiences

ii. Motor learning: It involves the practical application of the learned phenomena. e.g. learning the skills like playing football, tennis, cricket etc; or the training of technicians whose motor skills need to be highly efficient.

iii. Problem solving: Problem solving tasks usually involves trial and error and primarily includes verbal processes. While doing the problem-solving task, individual learns many responses that can be helpful for him in different situations

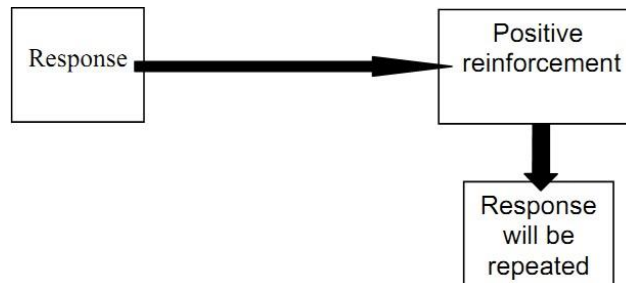
OPERANT CONDITIONING:

Operant conditioning forms an association between a behavior and a consequence

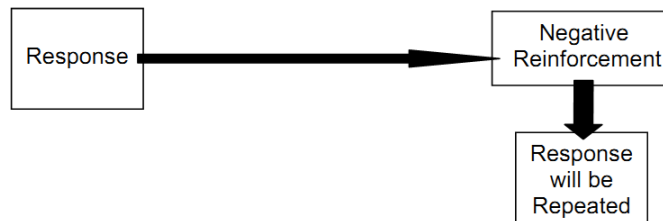
Consequences of Behavior:

Reinforcement: Increasing the probability that preceding behavior will be repeated through a stimulus.

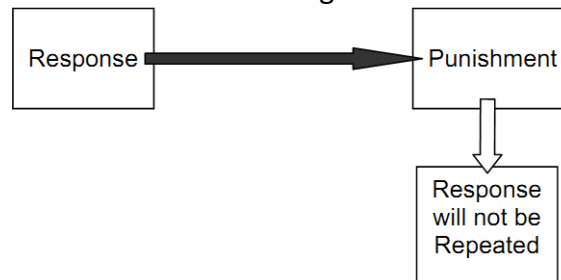
Positive Reinforcer: A stimulus whose introduction brings about an increase in the preceding response.



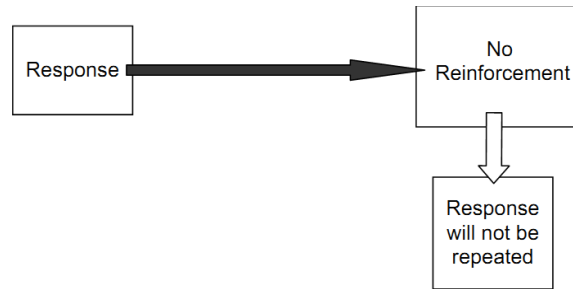
Negative Reinforcer: A stimulus whose removal reinforces and leads to a higher chance that the response bringing about this removal will be repeated.



Punishment: An unpleasant or painful stimulus whose introduction following a certain behavior decreases likelihood that the behavior will occur again.



No reinforcement: This also deters or stops a behavior from being repeated.



Applications of Operant Conditioning in Everyday Life

- Child rearing
 - Classroom management
 - Teaching of skills
 - Animal taming
 - Advertising
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