

LESSON 5

SENSORY PROCESSES: ATTENTION AND PERCEPTION

SUMMARY

The purpose of describing sensory receptors, attention and perception is to familiarize you with the way our sense organs collect information and how it is processed by our brain. We have five sense organs – eyes, ears, nose, skin, tongue - through which we acquire information. The two functions of our senses: survival and sensuality.

Colours do not really exist “out there” in objects rather our world of colour is a product of sensory and perceptual processes of brain.

Sensation

Sensation is a process by which neutral impulses are created by stimulation of sensory neurons that results in awareness of conditions inside or outside the body.

The sensory systems process information reaching to the brain. The motor systems process information going out of the brain to muscles and glands.

Difference threshold - the smallest difference between two stimuli that can be consistently and accurately detected on 50% of trials.

Our sensation is affected by our past experiences and expectations.

Background of a stimulus also affects our sensation.

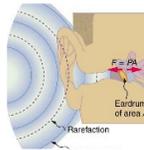
The minimum amount of physical energy needed to produce a sensory experience is called “**absolute threshold**”.



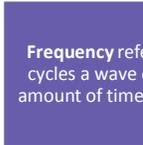
Vision - The eye gathers and focuses light and an image is formed on the retina. Sir Isaac Newton, discovered that when white light passes through a prism it separates into a rainbow of colour – the visible spectrum.



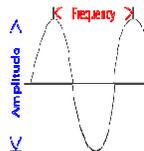
Colorblindness - It is the partial or total inability to distinguish colours. Most colour-blind people have trouble in distinguishing red from green.



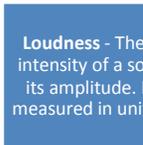
Hearing - Sound is created when actions cause objects to vibrate.



Frequency refers to the number of cycles a wave completes in a given amount of time. Its unit is Hertz (Hz).



Pitch - it is the highness or lowness of a sound determined by the sound's frequency.

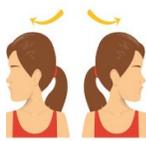


Loudness - The loudness or physical intensity of a sound is determined by its amplitude. Loudness of sound is measured in units called decibels (dB).



Timbre - The quality of a sound wave's complexity is its timbre.

Vestibular sense – it is the Sense of Bodily orientation. It tells us when we are moving or how our motion is changing.



Kinaesthetic sense - it is the sense of body position and the movement of body parts relative to each other.



Olfactory sense – it is the sense of smell. It involves a sequence of bio-chemical activities that triggers neural impulses. Once activated these neural impulses convey odour information to the brain.

Gustatory sense - The taste receptor cells are gathered in the taste buds on the upper side of the tongue. There are only four true or primary taste qualities: sweet, sour, bitter and saline.



Skin - Our skin contains nerve endings that are stimulated by contact with external objects and it produces sensations of cold, warmth or pressure.

Pain - Pain is the body's response to stimulation from noxious stimuli



Perception

Sensation is the stage where neural activity codes the information about nature of stimulation. Perception is the next stage in which an internal representation of an object is formed.

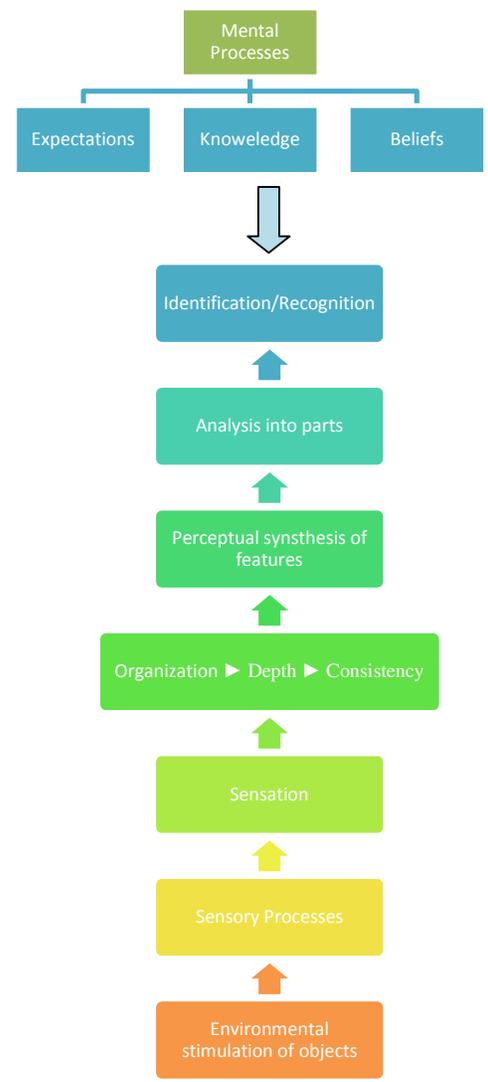
Perception refers to the elaboration and interpretation of these sensory experiences. It involves synthesis of simple sensory features into percept of an object that can be

recognized. It is governed with our past and present experiences.

It helps in identification and recognition, and meaning is assigned to the percept. Perception and recognition are combined processes that do not act separately.

Stages of Perception

The stages of perception are depicted in the flowchart below;



Perceptual Organization

The most common form of perceptual organization is called figure ground organization in which sensations are grouped into objects or figures that stand out on a plainer background.

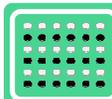


A. Laws of Perceptual Grouping



Proximity

All the stimuli that occur together in space or time will be organized together



Similarity

Elements which are similar in structure or have common characteristics will be grouped together



Continuity

Perception tends toward simplicity and continuity



Closure

An incomplete figure will be seen as a complete one



Common Region

Stimuli that are found within a common area tend to be seen as a group

B. Perceptual Constancy

Perception of an object's shape, size or brightness remains the same even though its image on the retina has changed. This is called **perceptual constancy** and is found in all senses.

If the perceived size of an object remains the same, even though the

size of its image on the retina changes it is called **size constancy**.

In **shape constancy** the shape of an object remains stable even though the shape of its retina image changes.

Brightness constancy refers to the fact that the brightness of objects appears to stay the same as lighting conditions change.

C. Depth Perception

It is the ability to see three-dimensional space and to accurately judge distances. The ability of depth perception is partly innate and partly learned.

The cues which work with just one eye are called **monocular cues** and those which require two eyes are called **binocular cues**.

Binocular cues are the most basic source of depth perception that is caused due to retinal disparity (a discrepancy in the images that reach the right and left eyes).

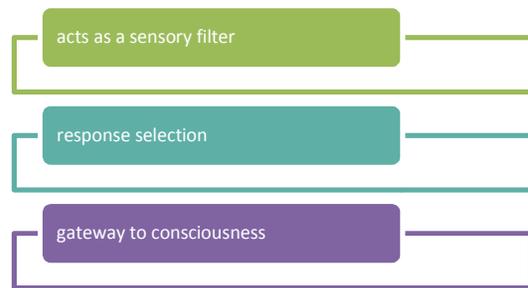
Pictorial cues - these are features for depth- found in paintings, drawings and photographs that impart information about space, depth and distance. These cues cause apparent perception of things which are not there.

Illusions are distorted perception of stimuli that exist, whereas **hallucination** is perception of objects or events that have no external reality.

Attention

'**Selective attention**' is a process in which we give priority to a particular incoming sensory message.

Attention has broadly three possible functions:



Determinants of Attention

Physical Factors	Motives
<ul style="list-style-type: none">Physical factors like repetition, contrast, shape, size, brightness and contrast do affect our attention	<ul style="list-style-type: none">Motives also play a role in shaping our perception

Extra Sensory Perception (ESP)

ESP is the ability to perceive objects or events in ways that cannot be explained by known sensory capacities. Parapsychology is the study of ESP phenomena.

Events that seem to lie outside the region of accepted scientific laws are called **psi-phenomena**.

Clairvoyance - It is the ability to perceive events or gain information in ways that appear unaffected by distance or normal barriers.

Telepathy - It is the perception of another person's thoughts or the

ability to read someone else's mind.

Pre-cognition - Ability to predict or perceive accurately future events.

Psycho-kinesis - The ability to exert influence over inanimate objects by will-power (mind over matter).

Applications of Perception in Everyday Life

Eyewitness testimony - it is key to decisions in the judiciary but it is prone to distortion. Therefore, it is advisable for the investigative agencies to gather more evidence instead of solely relying on it.

Perceptual awareness and positive psychology - Humanistic psychologists believe that some people perceive themselves and others with unusual accuracy.

The value of paying attention - Perceptual clarity requires rigorous effort of paying more and more attention. Breaking perceptual habits and interrupting habituation can lead to good results.

Do you know?

Your perception is influenced by your past experiences, memory and expectations.

The colour perception is possible because of the **cone cells** in the **fovea**.

Evaluate yourself

1. Discuss the different human sense modalities.
2. What is “perceptual organization”? Discuss the various laws of perceptual grouping.
3. What is attention? Explain factors that influence attention.

Extend Your Horizon

To learn more about different illusions in perception visit:

<https://beliveinpsychology.com/fun-facts-about-perception/>

To learn more about laws of perceptual organization visit:

<https://courses.lumenlearning.com/wsu-sandbox/chapter/gestalt-principles-of-perception/>