

# Perception

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Perception refers to way the world looks, sounds, feels, taste or smells.

OR can be defined as whatever is experienced by a person.

Perception is a process by which stimulation of the senses is translated into meaningful experience.

P. is the process of acquiring, interpreting, selecting & organizing sensory information by sensory organs & brain.

Thus-

P. is not just the product of information provided by stimulus environment & extracted by evolved perceptual mechanisms. Perception is problem-solving activity, in which perceiver has to make sense of information available from diverse sources.

- information from proximal stimulus, including the entire sensory field, analysed by bottom up processing.

- information derived from memory including expectations, beliefs & world knowledge, contributing to 'top-down' processing

This problem solving constructive approach to perception is sometimes known as perceptual cycle.

Thus perception - our experience of the world - arises from sensory inputs plus the ways we process the sensory information.

### Perceptual organisation..

When several objects are present in the visual field, we tend to perceive them as organised into pattern or groupings.

Using sensory information as raw material the brain creates perceptual ~~information~~ experiences that go beyond what is sensed directly.

Organisation in perception partially explain our ~~perception~~ perception of complex patterns as unitary forms or objects - as we see objects as objects only because grouping process operate in perception without them the various objects & patterns we perceive - a face on a T.V screen, a car, a tree, a book... would not hang together as objects or patterns.

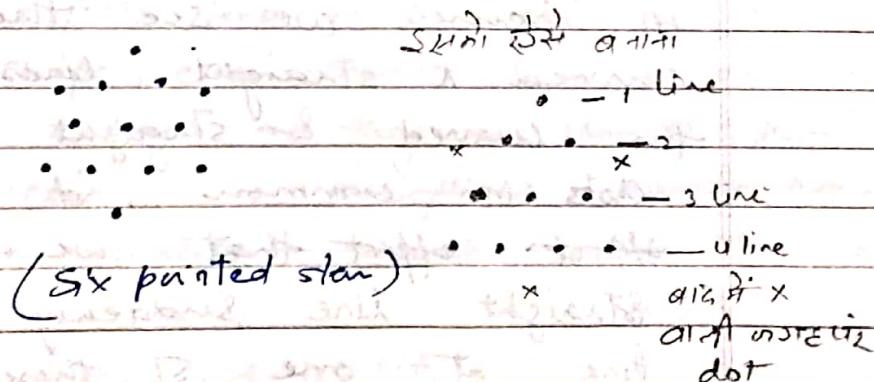
There are some laws of perceptual organisation - (visual perception).

1. Law of proximity
2. " Similarity
3. Law of good figure
4. Law of continuation
5. Law of closure.

1)

① Law of proximity - says that items which are close together in space or time tend to be perceived as belonging together or forming an organized group.  
 as - we see 3 pairs of vertical lines instead of six single lines.

② Law of similarity - most people see one  $\Delta$  formed by the dots with its apex at the top & another triangle formed by the rings with its apex at the bottom. They perceive triangle because similar items (dots & rings) tend to organize together. Otherwise they would see as a hexagon or as a six-pointed star.



③ Law of good figure - says that there is a tendency to organize things to make a balanced or symmetrical figure that includes all the parts.

However does not always occur. As most easily seen in 6 pointed star than as one figure composed of dots & another made up by circles.

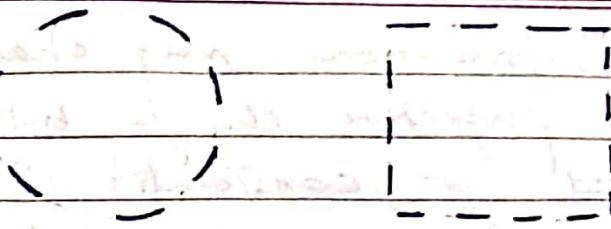
The law of good figure wins out over the law of similarity because the rings by themselves or the dots by themselves do not form symmetrical good figures.

- 4) Law of continuation - the ~~too~~ tendency to perceive a line that starts in one way as continuing in the same way.
- 

ex in the figure a line that starts out as a curve is seen continuing on a smoothly curved course — same as straight line — straight line & if it does change direction as forming an angle rather than a curve.

In figure we see the dots as several curved & straight lines. Even though the curved & straight line cross & have dots in common, it is only with an effort that we can perceive a straight line suddenly becoming a curved line at one of these junctions.

- 5) law of closure: refers to perceptual process that organize the perceived world by filling in gaps in stimulation.  
ie — Law of Closure makes our perceived world to form more complete than the sensory stimulation that is presented.



Vert Pencil is drawing  
line all in for Pence  
as we see circle (with gap in it) + square  
with gap in it - not simply as disconnected  
lines

acc. to this

principle - we  
tend to see a

complete object

even though parts of  
it may be missing

as we see circle (with gap in it) + square  
with gap in it - not simply as disconnected

lines

Tachistoscope - device used for in  
perceptual experiments.

### Perceptual constancies -

Using sensory information as raw  
material, the brain creates perceptual experience  
that goes beyond what is sensed directly.

Familiar objects tend to be seen as having a  
constant shape, even though the retinal images  
they cast change as they are viewed from  
different angles - Perceptions having have  
the quality quality which refers to the

Perceptions have the quality of constancy,  
which refers to the tendency to sense &  
perceive objects as relatively stable &  
unchanging despite changing sensory  
stimulation & information. Once we  
have formed a stable perception of an object  
we can recognize it from almost any  
position at any distance & under almost any  
illumination.

The sensory information may change as illumination & perspective change, but the object perceived as constant.

The stability of the environment as we perceive it is termed perceptual constancy. - the contribution of the perceiver is also revealed by perceptual constancies.

1) Size constancy  
2) Shape "

3) colour c.  
4) brightness c.

11) Size constancy - In size constancy, the perceived size of an object is ~~is~~ does not change as its distance from the observer changes.

Under natural viewing conditions moving objects do not appear to change in size.

→ The phenomenon of size constancy is the basis for no. of visual illusions.

2) Shape constancy - is the ~~st~~ tendency to see an object as the same no matter what angle it is viewed from i.e. the perceived shape of an object is invariant over changes in shape of its retinal image -

ex - We see the door opening & closing but we don't see it change shape.

3) Brightness constancy - Our experience of brightness stays relatively constant despite great changes in the amt. of physical energy reaching to our eyes.

Ex. appearance of white paper that lies partly in shadow — We perceive the paper as uniformly white, we don't perceive the shadowed portion as gray, but rather as white in the shadow.

i.e. — The physical energy ratio between the object & its surround stays constant. — or unchanged brightness Ratio give constant brightness experience or brightness constancy.

4. Colour constancy - is the  $\rightarrow$  inclination to perceive familiar objects as retaining their colour  $\leftrightarrow$  despite changes in sensory information.

## Types of Perception.

- 1) Internal perception (Interoception) tells us what is going on in our bodies. We can sense where our limbs are, whether we are sitting or standing, as well as sensations such as suffocation, fullness of rectum, urinary bladder, intestinal distension. Sensations felt in the throat and lungs.

- 2) External perception - like -
- 1) movement, 2) space, 3) distance & depth 4) Time (that involves mental process involved in judgement, memory, or inference based on prior experience)
- Perception of Movement - The perception of movement is a complicated process involving -
- 1) visual information from the retina &
  - 2) messages from the muscles around the eyes as they follow an object.
- depends in part on movement of image across the retina of eye
  - Motion perception is the process of inferring the speed and direction of objects &

Surfaces that move in a visual scene given some visual input.

Perceived motion also occurs without any energy movement across the receptor surface - (this type) motion called apparent motion,

- The perception of actual physical movement of objects in the world — real motion
- The perception of both apparent & real motion illustrates perceptual process at work.

- Among the perceptual processes involved in perceiving real motion are movement constancy and the concept of a brain comparator.
- The brain comparator is a system that cancels the perception of motion caused by eye and head movements.

→ Stroboscopic motion — as seen in movies, and on television; autokinetic motion & induced movement one example of Apparent motion.

Space perception — is the process through which humans & other organisms become aware of the relative position of their own bodies & objects around them. Space perception provides cues, such as

depth & distance - that are imp. for movement & orientation to the environment.

### 3. Depth & distance - (mainly perception) measuring

Sensory cues indicate the distance at which objects in the environment are located from the perceiving individual & from each other. Such sense modalities as seeing & hearing transmit depth & distance cues & are largely dependent on each other.

There are 2 cues for depth & distance perception -

1) Monocular cue for - - - - - are cues in which in that they do not depend on the use of two eyes & are available to organisms that are blind in one eye.

- used by painters to give us a 3D experience from a flat painting.  
→ there are 4 monocular cues in depth perception -

- 1) linear perspective
- 2) clearness & texture gradient
- 3) interposition &
- 4) shadows

## • Binocular cue for depth & distance perception.

are depend on the fact that we have two eyes & ~~eye~~ work on the principle of convergence. When fixating on an object the two eyes turn towards each other. From simple geometry, it is a fact that the angle of convergence depends on the distance between the eyes & the object.

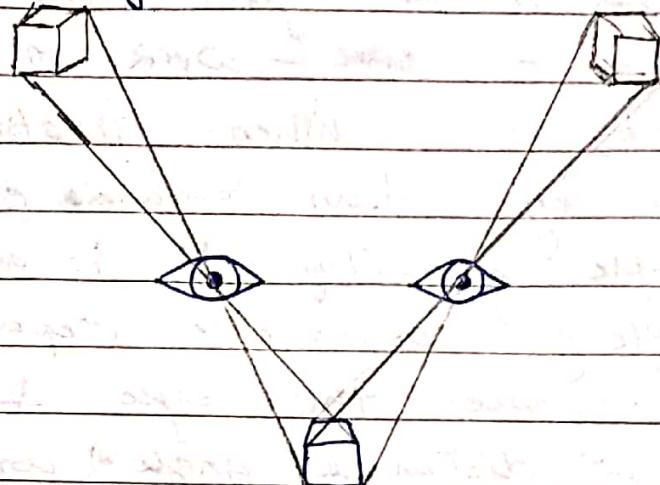
- at short distance angle of convergence is large
- at long distance " " " is small.

→ Convergence principle works only upto 30-40 feet. After that distance the eyes are essentially parallel & converging is not longer available.

Because the two eyes are separated by a space of 2-3 inches, they each provide somewhat different - disparate images of the object — Thus This Cue is known as — Retinal disparity — it is the diff. in the images falling on the retinas of the 2 eyes.

what the  
right eye see

what the  
left eye see



geometry of retinal disparity, an imp.  
binocular cue for depth perception.

→ nearer the object is the greater is the  
difference or disparity.

ordinarily however the individual relies  
on collaboration of all senses which  
known as intermodal perception.

(4)

Time perception - Subjective experience  
of time which is measured by someone's  
own perception of the duration of the  
indefinite & unfolding events.

The perceived time interval between two  
successive events is referred as  
perceived duration.

Another person's perception of time  
cannot be directly experienced by or under-  
stood.

Time perception is construction of the

brain that is manipulable and distortable under certain circumstances.

~~a) where:~~

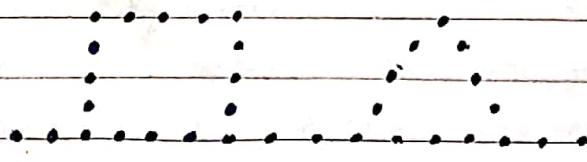
People differ in the way they process sensory inputs to give rise to what they experience. Thus there are individual differences in perception. Among the factors that influence an individual's perception are —

- 1) perceptual learning
- 2) differences in what the person expects to perceive or the person's set
- 3) motives & needs and
- 4) the individual's characteristic perceptual cognitive style.

## Gestalt psychology

The German word Gestalt means "form" or (pattern) or configuration. & the Gestalt psychologists maintained that the mind should be thought of as resulting from the whole pattern of sensory activity and the relationships & organisations within the pattern. The brain creates a perception that is more than simply the sum of available sensory inputs & it does so in predictable ways. Gestalt psychologists translated these predictable ways into principles by which we organise sensory information.

According to Gestalt psychologists the organisation & relationship of elements determine the mental experience a person has -



Our perceptions are based on perceptual hypotheses. These hypotheses are informed by no. of factors. —

- 1) Subjective — personalities, experience & expectations
- 2) Objectives —

~~2.1~~ figure-ground relationship - Ability to discriminate shapes. occurs by among different figures & following principles -

- 1) ~~law~~ Law of proximity OR Proximity principle
- 2) Similarity Principle football match ex. - group individual by colour of their uniform.
- 3) good figure or symmetry principle
4. continuity principle
5. ~~law~~ closure principle

Some matter perceptual organisation.  
Start from Pg 3 to 5 description -

(I think perceptual organisation & Gestalt psychology — same thing).

illusion -

An illusion is not a trick or a misperception. It is a perception - because it does not agree with our other perceptions.

In the perceptual illusion we perceive things that are not there.

1- Muller - Lyer illusion - The illusion works whether the lines are horizontal or vertical.

Principle - unconscious inference  $\rightarrow \leftarrow$

The line with the feathers  $\leftarrow \rightarrow$

looks longer than the line with the arrowheads even though the two horizontal lines are precisely the same length.

2. Ponzo illusion - converging lines created by 'railroad tracks' make it seems that the upper horizontal line is longer than the lower one.

~~cos~~ Principle involves - unconscious inferences

3. Poggendorff illusion - Top & bottom lines appear to be displaced even though they are <sup>actually</sup> connected

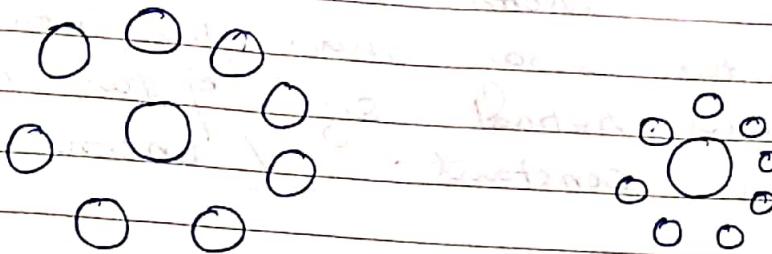
$\Rightarrow$  Plays imp role in British flag

- See diagonal red bars meeting at the center of the flag. But they don't meet. (Physical displacement)

4.

### Ebbinghaus illusion (or Titchener circle)

Two circles of same dia, but one seems unded by small circles seems larger than one surrounded by large circles.



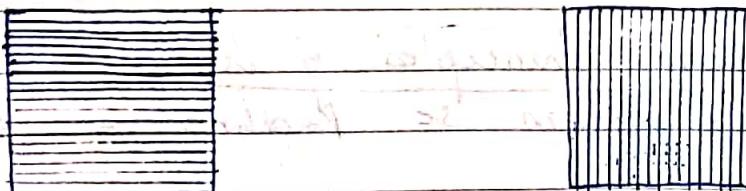
5.

### Horizontal - vertical illusion

The vertical line took much longer than the horizontal line even though they are precisely the same length.

6.

### Helmholtz illusion - A square composed of horizontal stripes looks taller and thinner than one composed of vertical stripes.



illusion - by depth & distance -

( created by a misapplication of the principles of constancy.

→ Moon illusion - visual illusion in nature.

moon on the horizon looks farther away than the moon at zenith, but retinal size of two moons remains constant. (unconscious inference)

Ames Room - The observer looks with one eye into the Ames room, through a hole in the wall. The two people appear to differ in height; but in fact they are identical twins as close to identical in heights as two people are likely to get.

It works because perception is determined by the perceiver's knowledge & beliefs; not just the physical stimulus.

→ Theoretical Principles of Gestalt psychology -

→ me am se Padma - set By all ref.