

## LESSON 5

### ATTENTION AND PERCEPTION

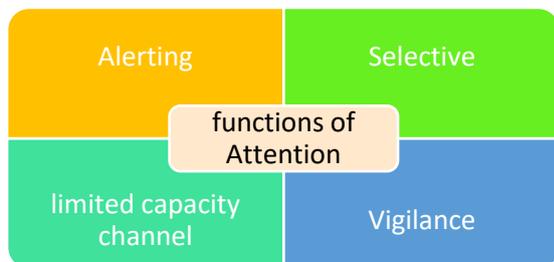
#### SUMMARY

We are bombarded with a lot of stimuli on a daily basis. . However, only selected part of the available stimulation is registered for processing and the rest is filtered out. This process of selectively responding to a stimulus or range of stimuli is called **attention**.

Processes of attention limit the reception of stimuli selectively. Thus, attention serves as the tuner in filtering information selectively for further processing that finally leads to **perception**.

#### Attention and its Component process

Attention is a central process and it precedes perception.



1. **Alerting** is a state of focused awareness with readiness to respond.
2. **Selectivity** is a process by which attention is focused on stimulus of interest. It acts as a filter, that allows some information in and the other out.
3. **Limited Capacity channel** refers to processing

information one at a time or **serial processing**.

4. **Vigilance function** - Maintaining attention on a task continuously is called vigilance or **sustained attention**.

#### Creating a World of Reality: Perception

Perception is interpretation of sensation. In perception we study how we receive information from the external world and with the help of internal system we construct a world of reality.

#### Perception of Shape

##### How do we Perceive Shape?

Shape/form is defined as areas of visual field that are set off from the rest of the field by visible contour. **Werner** in 1935 demonstrated how contours are perceived and their role in the perception of shape or form. To perceive a shape, its contours must be sharp enough to mark off region that is called shape.

##### Figure and Ground

In our visual field some area is segregated to form figures and the rest is relegated to the background against which the figures are perceived. Figure-ground segregation is essential for the perception of shape. The distinction between figure and background is presented below.

The figure has a shape, while the ground is relatively shapeless.

The ground seems to extend behind the figure.

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The figure usually tends to appear in front, the ground behind.

The figure is more impressive, meaningful, and better remembered

## The determinants of Figure-Ground Organization

**Kohler, Koffka, and Wertheimer** – Gestalt psychologists, proposed that the brain has the innate capacity for organizing perceptions and gave laws of perceptual organization.

### Laws of Perceptual Organization



#### Law of Pragnanz

Perceptual organization will always be as "good" as the prevailing conditions allow



#### 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



#### Closure

An incomplete figure will be seen as a complete one

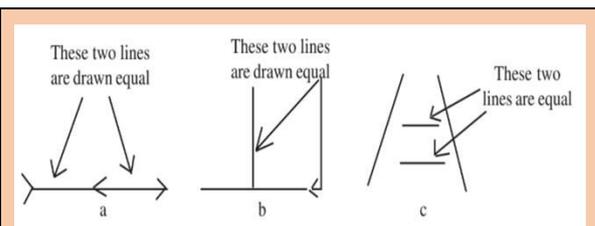
## Illusion

**Illusions** (also called "false perceptions") are misperceptions

resulting from misinterpretation of sensory information.

**Moon illusion** - The moon in the horizon looks far bigger in size than moon in the zenith. The retinal image is same but its perceived size differs. **Helmholtz** long back suggested that judgement of size is related to the judgement of distance (**size-distance relationship**).

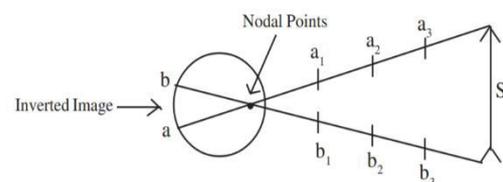
**Geometrical illusions** - illusions that can be demonstrated by drawing some lines, are called geometrical illusions. Examples of few geometric illusions are given in the diagram below:



- Muller-Lyer illusion
- Vertical-horizontal illusion
- Ponzio illusion

## Perception of Space

Perception of space also refers to the perception of size and distance. the image of the three-dimensional world is projected on the two-dimensional retina.

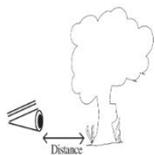


The Problem of Space orientation

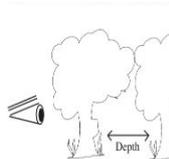
It can be observed in the diagram that the points  $a_1, a_2, a_3, \dots$  on

the line of sight fall on the retina at “a”. Similarly, those of points b1, b2, b3, ... fall on “b” on the retina. (The image of the external objects on retina is inverted). The available information on the retina can only indicate the direction of these points in space, but not in any obvious manner about distance from the eye. That is, the location of a1, a2, and a3 or b1, b2 and b3.

Perception of space is possible because of the various cues available to us. Before moving on to cues, let's understand distance, depth and size.



**Distance** refers to the absolute spatial extent (D) between the observer and the object.



**Depth** is the Relative spatial extent between two objects as viewed by the observer.

**Size** refers to the physical size (S) that an object has. The size we perceive is called Perceived Size (S').



We perceive depth and distance with the help of various cues available to us. The major categories of cues are –

- i. Non-Visual cues
- ii. Binocular cues
- iii. Monocular cues

**i. Non-Visual cues**

**Accommodation** and **Convergence** are called non-visual cues because they do not emanate

from the retinal image, as is the case with other cues.

**Accommodation** - The image of the external objects is focused on the retina with the help of lens in the eye. The lens is adjusted by the Ciliary muscles to focus far and near objects on the retina. The ciliary muscle changes the convexity of the lens so that the image of the object is clearly focused and this process is called accommodation.

**Convergence** - When watching an object close to us, our eyes point slightly inward. This difference in the direction of the eyes is called convergence.

**ii. Binocular cues**

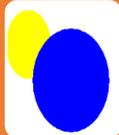
Binocular cues emanate from the retinal image itself. These cues are:

- a. **Double images** - when we fixate our eyes on an object in space, fusion takes place and we see one object. However, when we fixate on an object, all other objects nearer or farther than the fixation point fall on the non-corresponding points and produce double images.
- b. **Binocular disparity** - Objects that are nearer or farther than the fixation point project their retinal images on the non-corresponding or disparate areas of the two retinas. Greater the distance from the fixation point, greater

will be the binocular disparity.

### iii. Monocular cues

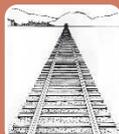
Monocular Cues are also called pictorial cues because they include the kind of depth information found in the photographs and paintings.



**Interposition**  
When an object (A) partially blocks another object (B), the object blocked is perceived farther away than the object blocking it.



**Aerial Perspective**  
objects that look hazy are perceived far away in comparison to those which look clear.



**linear perspective**  
When parallel lines recede into the distance, they converge towards a point in your retinal image.



**Light and Shadows**  
The shadows cast by one object on another can indicate which object is farther away.



**Familiar size**  
When looking at an object away from us we can interpret the distance from the retinal image by taking into account the familiar size.



**Texture-Density Gradient**  
Objects lying on a surface that look fine and smooth in texture are perceived at greater distance than those on a rough surface.

### Factors influencing Perception

Factors such as - stimulus variables and internal factors (internal needs, motivations, socio-cultural background) peculiar to

an individual, determine how our perceptions are organized.

**Context and Set-effects** -The context creates an expectation in our brain (top-down phenomenon) that influences our perception at a particular moment.

Perceptual set refers to our mental expectancies and predispositions to perceive one thing and not another. Our learned assumptions and beliefs help us in organizing our perceptions.

**Needs and Motives** - personal variables, like needs, emotions, values, personality, etc. influence our perceptions. The need state of individuals affect their perceptions. Example- A person who is thirsty will first look in the drinks section of a menu.

**Social and Cultural factors** - Our perceptions reflect the effect of past learning and, therefore, if learning and socialization takes place in a particular socio-cultural background it will be reflected in our perceptions.

### Extra-Sensory Perception (ESP)

It is another type of perception in which perception is organized without the involvement of senses, called ESP. As the word denotes, extra sensory perception is perception without (physical) stimulation. It is considered a Para-psychological phenomenon.

Extra sensory perception includes phenomenon like -

**Telepathy** refers to transfer of thought between two persons at different places.

**Clairvoyance** refers to perceiving objects and events without the involvement of senses

**Telekinesis** refers to controlling objects without touching them.

### 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. Describe the major functions of attention.
2. Explain the process of shape perception.
3. How do we perceive a three-dimensional world on a two-dimensional retina?
4. What do we mean by monocular cues? List at least six such cues.
5. Explain different factors that influence our perception.

### Extend Your Horizon

To learn more about different illusions in perception in detail visit:

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