

ATTENTION AND PERCEPTION

ATTENTION DEFINED

Attention is the term given to the perceptual processes that select certain inputs for inclusion in our conscious experience, or awareness, at any given time.

CHARACTERISTICS OF ATTENTION

FOCUS OF ATTENTION the processes at attention divide our field of experience into a focus and a margin

Events that we perceive clearly are at the focus of experience.

MARGIN OF ATTENTION

Other items are perceived dimly. We may be aware of their presence but only vaguely so. These items are in the margin of attention.

DIVISION OF ATTENTION

When we try to concentrate on two objects or events simultaneously it is called division of attention.

We are all engaged in more than one activity at a time. A number of experiments have been devised to understand division of attention.

SHIFTING OF ATTENTION

Attention focused on an object or an event has a nature of changing to another object or an event quickly. It is very difficult for individuals to focus attention on one task for long time. Generally we focus attention on objects or events which are pleasant to our sense organs. This processes is called shifting of attention.

SPAN OF ATTENTION

Process of attention has certain limitations. It is impossible to perceive everything as soon as we focus attention on objects or events. The ability of an individuals to perceive particulars number of objects in a perceptual; process is called span of attention.

Psychologists have devised tachistoscope to measure span of attention.

DISTRACTION OF ATTENTION

We all try to focus our consciousness on some object or event. There are some objective or subjective factors which disturb our focusing of consciousness. As a result our attention is diverted from the perceptual field. This process is known as distraction of attention.

TYPES OF ATTENTION

VOLUNTARY ATTENTION voluntary attention is that which is willingly directed to an object and not as a result of any external pressure.

INVOLUNTARY ATTENTION involuntary attention is not directed by the individual desire or motivation. It may be against voluntary attention. As a result of external pressure the individual will not be able to be attention in his or her goal seeking.

HABITUAL ATTENTION It is the result of some habit or practice and the motivation in the individual. Habitual attention has a no need for a will. Continued application of voluntary attention converts it into habitual attention.

DETERMINANTS OF ATTENTION

Attention depends upon the nature or characteristics of the stimulus conditions. These stimulus conditions may be divided into two main groups

- 1) Objective conditions and
- 2) Subjective conditions.

OBJECTIVE DETERMINANTS

SIZE Attention depends upon the size of the stimulus objects bigger in size seek more attention than the smaller objects.

INTENSITY Intensity denotes the nature of the stimulus which has more intensity seeks attention of the individuals than the weaker stimulus. For example a brighter light easily attracts the individual than the dull one.

MOVEMENT OR CHANGE In our visual field moving object seeks more attention of the individuals than a non-moving object. Advertisers use this psychological factor in their advertisements.

NOVELTY OR STRIKING QUALITY A new or novel object or an event is more attractive than the usual one, higher the novelty it gets attention.

REPETITION Discrete stimulus has more effect than the continuous one. Stimulating the sense organs again and again produces more sensitivity than the continuous stimulation.

DURATION For an individual to be more attentive the duration of the stimulus should be short. If the duration of the stimulus is longer than it will have no effect. Duration of the stimulus depends on the intensity of the stimulus. If the intensity is more the duration of the stimulus is short. A weaker stimulus should exist for long time to seek attention.

CONTRAST OR DIFFERENCE A stimulus which has contrast or difference with its background is more powerful in seeking attention. A picture which has different colour of its background tends to get more attention.

SUBJECTIVE FACTORS

Subjective conditions are based on the individual characteristics. They are-

MOTIVATION: We have several needs. These needs are to be fulfilled. We focus our attention on fulfilling our needs. Human needs are not equally strong. A need is powerful at some time and weak at some other time. Strong needs motivates us towards certain goals and exhibit a kind of behaviour. We are more attentive to objects or events which are relevant to our basic motives.

PREVIOUS EXPERIENCE: All of us possess some previous experience with objects or events. We are more experienced in something and less experienced in some other things. These past experiences determine the selection of objects or events to attend to. Hence the processes of attention and perception are based on our previous experience.

PERCEPTUAL SET: Expectancy plays a vital role in attention and perception. Expectancy is much related to previous experience. Expectancy and previous experiences motivates individuals to encounter the stimulus situation in a particular way. Hence the individuals is more attention to what he expect and less attentive to other things.

Our interests and dispositions

Prevailing tendencies and

Adjustment of the organism to its environment are some of the other subjective factors which determines attention.

PERCEPTION

Perception can be defined as the process of immediate apprehension of sensory experiences through past experiences.

An organism is surrounded by a number of stimuli. We get information about these stimuli through our sense organs and respond to them appropriately. This process of responding to stimulus includes perception.

GESTALT PSYCHOLOGISTS AND PERCEPTION

Gestalt school of psychology is much related to the field of perception. The German word "GESTALT" means "FORM" or "CONFIGURATION". According to Gestalt psychologists, perception of whole affect the way in which the parts are perceived. Perception acts to draw

the sensory data together into a holistic pattern. The favorite phrase of Gestalt psychologists is “ the whole is always greater than some of its parts.

ORGANISATION AND PERCEPTION (FORM PERCEPTION)

When several objects are present in the visual field, we tend to perceive them as organized into patterns or groupings. Gestalt psychologists emphasized that organized perceptual experience has properties which cannot be predicted from a simple analysis of the components.

In other words they have said that “the whole is greater than some of its parts”. This means that what is perceived has its own new properties that emerge from the organization which takes place.

Organization in perception partially explains our perception of complex patterns as unitary forms or objects. We see objects only because grouping processes operate in perception. Without them the various objects and patterns we perceive do not “hang together” as objects or patterns. They would merely be so many disconnected sensations.

The following are principles of perception that help our perceptual organization

FIGURE AND GROUND

Figure ground organization is basic to stimulus patterning. Geometrical patterns are always seen as figures against a background and thus appear to be like objects, with contours and boundaries.

Studies show that the figure - ground organization is innate and present even when other features of perception are missing.

We can perceive figure-ground relationships through senses other than vision.

PROXIMITY

The 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.

SIMILARITY

The law of similarity says that similar items tend to be organized together.

LAW OF GOOD FIGURE

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.

LAW OF CONTINUATION;

This law states that there is a tendency to perceive a line that starts in one way as continuing in the same way.

LAW OF CLOSURE

The law of closure refers to perceptual processes that organize the perceived world by filling in gaps in stimulation. By action of these processes, we perceive a whole form, not disjointed parts.

DEPTH PERCEPTION

The human retina is flat and has a two-dimensional surface. The image falling on the retina is only two-dimensional namely length and breadth. But our world is three dimensions namely length breadth and depth.

Our impressive ability to judge depth occurs because we make use of many different cues in forming such judgments.

These cues can be divided into two categories monocular cues and binocular cues.

MONOCULAR CUES

These are cues to depth perception provided by one eye. Monocular cues to depth include the following

SIZE The larger the image of an object on the retina, the larger the object judged to be. In addition if an object is larger than other objects it is often perceived as closer.

LINEAR PERSPECTIVE Parallel lines appear to converge in the distance. The greater this effect the farther away an object appears to be.

TEXTURE GRADIENT The texture of surface appears smoother as distance increases.

ATMOSPHERIC PERSPECTIVE The farther away objects are, the less distinctly they are seen because of smog, dust, haze that get in the way.

INTERPOSITION If one object overlaps another it is seen as being closer than the one it covers.

AERIAL PERSPECTIVE Below the horizon, objects lower down in our field of vision are perceived as closer. Above the horizon objects higher up are seen as closer.

MOTION PARALLAX When we travel on a vehicle, objects far away appear to move in the same direction of the observer, whereas closer objects move in the opposite direction. Objects at different distances appear to move at different velocities.

BINOCULAR CUES

Much of our ability to perceive depth is based on the use of monocular cues. However we also rely heavily on binocular cues.

Binocular cues are cues to depth provided by the use of both eyes.

Binocular cues for depth perception stem from two primary sources.

CONVERGENCE In order to see close objects, our eyes turn inward, toward one another. The greater this movement the closer such objects appear to be.

RETINAL DISPARITY Our two eyes observe objects from slightly different positions in space. The difference between the two images is interpreted, by our brain, to provide another cue to depth perception.

The lists of monocular and binocular cues are by no means exhaustive. By using the wealth of information provided by these and other cues, we can usually perceive depth and distance with great accuracy.

OBJECT PERCEPTION AND PERCEPTUAL CONSTANCIES

Perception is oriented toward things rather than toward sensory features that describe them. Detached sensory features (“blueness” or “squashes” or “softness”) can be perceived, but they are usually perceived as the qualities of the objects (for example we perceive things as “blue flowers” or “the square box” or “the soft pillow etc”).

PERCEPTUAL CONSTANCY

Perceptual constancy refers to the fact that the environment as we perceive it changes much less than do our sensory inputs. The world remains relatively stable despite drastic changes in the sensory input.

COLOUR CONSTANCY

The tendency to see the colour of a familiar objects as the same, regardless of the actual light conditions is called colour constancy.

The memory of the object’s colour information about the nature of the illumination and the colour of surrounding objects are clues to colour constancy.

When these clues are eliminated the colour contract diminishes or disappears.

Without colour constancy clues we see the colour of objects according to the wavelength of light being reflected to the eye.

Example The owner of a blue car see it as blue whether looking at it in bright sunlight, in dim illumination or under a yellow street light.

SHAPE CONSTANCY

The tendency to see an object’s shape unchanging regardless of the viewing angle is called shape constancy.

Example when a door swings open toward us, the shape as projected on the retina goes through a series of distortions. The door's rectangular shape becomes a trapezoid, with the edge toward us looking shorter than the hinged edge, then the trapezoid grows longer, until all that is projected on the retina is a vertical line of the thickness of the door. We can readily distinguish these changes, but the psychological experience is an unchanging swinging door.

SIZE CONSTANCY

The tendency to see an object as of same size regardless of distance is called size constancy.

Perceptual size constancy results when an object and its background change together, and that the relationships between them stay the same.

The phenomenon of size constancy is the basis for a number of visual illusions.

When we look at a distant object, we can judge its size in one of three ways-

1) **Perceptual size** We might judge it according to the geometry of perspective, seeing it as smaller, the farther away it is. This size would correspond to the size of the image on the retina.

2) **Object size** We might judge an object by its true size and hence see it remaining constant in size regardless of its distance.

3) **Compromise between perspective size and object size** We might compromise and see the object as smaller at a distance, but not as much smaller as the geometry of perspective indicates.

How well size constancy operates depends upon the presence of distance cues and upon our familiarity with the object.

Size constancy develops largely as the result of experience.

Example Hold a quarter a foot in front of your eyes and then move it out to arm's length. It does not appear to get smaller. However the retinal image of the quarter 12 inches away is half the size of the image of the quarter when it is 24 inches from the eye. It certainly does not appear to reduce to half its size as we move it to arm's length.

LOCATION CONSTANCY

The fact that an object appears to retain its same position, even as we move about, is known as location constancy.

Our world has perceptual stability for us because we perceive objects as enduring, as being the same as when we last looked.

We also perceive these objects in a setting that remains essentially fixed, despite the fact that a myriad of changing impressions strike the retina as we move about.

Our location constancy depends, in unusual conditions, upon past experiences.

MOVEMENT PERCEPTION

Adaptive behaviour in the visual world requires that we perceive movement accurately.

HOW DO WE PERCEIVE MOVEMENT?

Objects moving through the visual field or along the skin stimulate different parts of the receptor. Movement perception can only partly be attributed to this changing stimulation. Perceived motion also occurs without any energy movement across the receptor surface.

TYPES OF MOVEMENT PERCEPTION

1. REAL MOTION the perception of actual physical movement of objects in the world is known as real motion. It involves active processing of the sensory input.
2. APPARENT MOTION motion occurs without any energy movement across the receptor surface. This type of motion is called apparent motion.

REAL MOTION

The perception of real motion is more complex. Real motion depends upon relations between objects within the visual field. Whenever there is movement, the perceptual system must decide what is moving and what is stationary with respect to some frame of reference.

CONSTANCY OF REAL- MOTION PERCEPTION

We need movement constancy in order to adapt to events in the visual world.

The perceived motion constancy depends upon the rate at which the object moves relative to its background.

Since the relationship between the object and its background stays relatively constant with distance, perceived motion constancy also remains fairly constant.

THE BRAIN COMPARATOR AND REAL MOTION PERCEPTION

If we hold our eyes steady and stimulation moves across the retina, we perceive movement. Sometimes, retinal images also move when we move our eyes, head and body. We must be able to tell whether the retinal images moved because we moved or because something out there moved.

The concept of brain comparator has been postulated to explain how it is possible for us to differentiate between the real motion of an object and motion caused by our own movement.

The brain comparator is a system which compares information about muscle movements with information about movements of the retinal image.

The brain comparator “evaluate” the moving retinal image as due to muscle movements and cancels the perception of movements. On the other hand, if the comparator has no information about muscle movements, the perception of movement is not cancelled.

APPARENT MOTION

Apparent motion is perceived in the absence of physical movement of an image across the retina.

We will now consider some examples of this kind of apparent motion.

1. STROBOSCOPE MOTION

This illusion of motion is created, when separated stimuli, not in motion are presented in succession. This kind of motion is the basis for movies.

A movie projector simply throws successive pictures of moving scene onto a screen. Each frame of a film is slightly different from the preceding one. When the frames are presented at the right speed, we perceive continuous, smooth motion.

PHI PHENOMENON

A simpler form of stroboscopic motion is known as phi phenomenon.

In a dark room if one offour lights blinks on and off, followed shortly by another there is the illusion of a single light moving from the first position to the second. When all four lights flash on and off in rapid sequence, it appears that a single light is traveling in a circle. But the perceived size of the circle is smaller than would be the case if the lights were actually rotating.

2. AUTOKINETIC EFFECT

If a person stares at a single spot of light in a completely dark room, the light will appear as moving, sometimes oscillating back and forth, and sometimes swooping off in one direction. This apparent movement of a stationary light is known as auto kinetic effect. Usually this occurs in an impoverished environment where there is no frame of reference.

Pilots during night flights are particularly susceptible to the autokinetic phenomenon. They sometimes line up a distant beacon with the edge of a wind-shield or some other frame of reference to minimize the effect.

3. INDUCED MOVEMENT

Induced movement occurs if a stationary spot or object is perceived as moving when its frame or background moves.

For example the moon is often perceived as “moving” through a thin layer of clouds. The movements of the framework of clouds, “induces” movements in the relatively stationary moon.

PERCEPTUAL PROCESSES - INDIVIDUAL DIFFERENCES

People differ in the ways they process sensory inputs to give rise to what they experience. Two people may have very different perceptions of the same television drama, lecture, meeting, or interpersonal encounter. Individual differences in learning, sets (expectations), motives and perceptual styles are at work to make one person's perceptions different from those of another.

PERCEPTUAL LEARNING

Eleanor Gibson had defined perceptual learning as "an increase in the ability to extract information from the environment as a result of experience or practice with the stimulation coming from it". Perceptual learning can be considered a variety of the cognitive learning.

Gibson gives many examples that show how perception can be molded by learning. She cites the competence of people trained in various occupations to make perceptual distinctions that untrained people cannot make. Skill, or artistry in many professions is based upon the ability to make these subtle distinctions. Experience is the best teacher for these perceptual skills; usually, they cannot be learned from books. Distinguishing the calls of birds is one Gibson's examples. A trained ornithologist can do it, but most of us have great difficulty.

As Gibson also points out, the remarkable feats of blind people are often matters of perceptual learning. It is not that their sensitivity to non-visual stimulation is greater than that of sighted people. Instead blind people learn to extract from the environment information not ordinarily used by sighted people.

It is obvious that learning to extract certain kinds of information from the environment – perceptual learning- is of enormous practical and adaptive value.

SET

Set refers to the idea that we may be "ready" and "primed for" certain kinds of sensory input. Such expectancies, or sets vary from person to person and are factor in both the selection of sensory inputs for inclusion in the focus of attention and in the organization of inputs.

MOTIVES AND NEEDS

Individual differences in motives and needs affect perception. In other words, we may attend to and organize sensory inputs in ways that match our needs. For example people who are hungry, thirsty, or sexually aroused are likely to pay attention to events in the environment which will satisfy these needs.

PERCEPTUAL – COGNITIVE STYLES

People are said to differ in the ways they typically and characteristically process information. The general processing strategies that characterize different people are known as perceptual – cognitive styles. Among the many dimensions along which people vary in perceptual

cognitive style are (1) the degree to which their perceptions (and other aspects of their behaviour and personality) are flexible or constricted and (2) field dependence or field independence.