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PSYCHOLOGY

PAPER No. 1: COGNITIVE SCIENCE

MODULE No. 17: ILLUSIONS

1. Learning Outcomes

After studying this module, you shall be able to

- Understand illusions
- Explain the difference between illusions and hallucinations
- Describe different types of illusions
- Discuss subliminal perception

2. Introduction

Illusions have been a fascinating topic for most people. A lot of scientific studies have taken place on perception and it dates back to the very beginning of the nineteenth century. It was during this phase that scientists got engrossed in understanding perception. Therefore since then there has been enduring interest and illusions have been used as tools in the study of perception. A lot of theories have been formulated ever since for explaining what illusions are.

Illusions are generally misleading perceptions of any visual image. A person who sees something contradicting to what others see is termed to have illusion. This consists of seeing shapes, lengths and directions in a wrong way. Let us now try and understand illusions with its types and also discuss about the role of subliminal perception in this module.

3. ILLUSIONS

An illusion refers to unique perceptual experiences in which information is received from the “real” external stimuli. This information further leads to an incorrect perception or a false impression, leading to stimulation from the objects or events. It is a constant error in visual perception. Therefore it is a wrong or false perception.

When an illusion is witnessed, our perception does not correspond to what is actually out there or that exists in the real world. Illusions generally fool an individual. A child may perceive a tree branch at night to be as monster which may be said to be an illusion.

It also becomes important to clearly distinguish between illusions and hallucinations as they tend to create a lot of confusion. An illusion is an experience that seems to originate with an external source of stimulation. Hallucination, on the other hand, is perception of objects not present at all.

The vision of an oasis at a distance in a dessert is a hallucination. Some people see ghosts in the dark.

Difference between Illusion and Hallucination

Illusion

1. Illusion is a kind of a false or wrong perception.
2. Illusions consist of an external stimulus.
3. Illusion is almost common and is generally universal.
4. Normal persons can also suffer from illusions.
5. Similar situation produce the same type of illusion in most people.

Hallucination

1. Hallucination is generally referred to as false perception.
2. Hallucinations are caused by internal stimulations, no external stimulus is present.
3. Hallucination is related to one's personal experiences.
4. Hallucinations are limited to mentally ill persons.
5. Similar situations may not arouse hallucination in all. Individual differences play a role with regard to hallucination. It is also seen that same individual may experience different hallucinations on different occasions also.

Causes of illusion

Let us now try and understand the different causes of illusions, they are as follows:

- 1. Similarity:** it indicates that two objects that appear to be equal in size and shape may be subject to higher degree of illusion. For instance, a long leaf as a lizard on the floor.
- 2. Expectancy:** it refers to the phenomena that when we are expecting something then everything seems to be fall similar to the expectant object. For example, while waiting for an empty autorickshaw, all autos at a distant appear to be empty. Another example would be that, while

searching for your lost jewellery all other glittering objects will be mistaken for the one which you are searching.

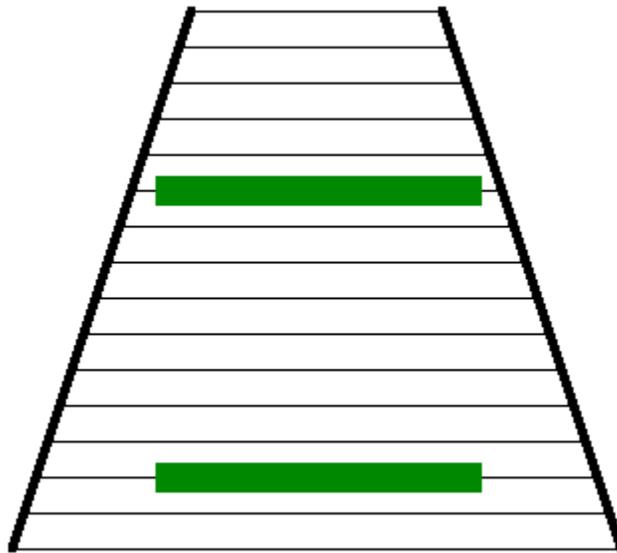
3. Subjective factor: Sometimes our habits and familiarity towards objects can cause illusion. For example cross two fingers of your hand, try and feel a marble with the crossed fingers you may see to feel one marble as separated into two.

4. TYPES OF ILLUSION

As discussed earlier also illusion is a distortion of a sensory perception. Illusions are subjective in nature, as individual differences may persist which leads them to experience illusion differently. Human senses can be deceived by illusions, but visual illusions are the most well known among them. There are several different kinds of illusions. Here are some really interesting types of illusion.

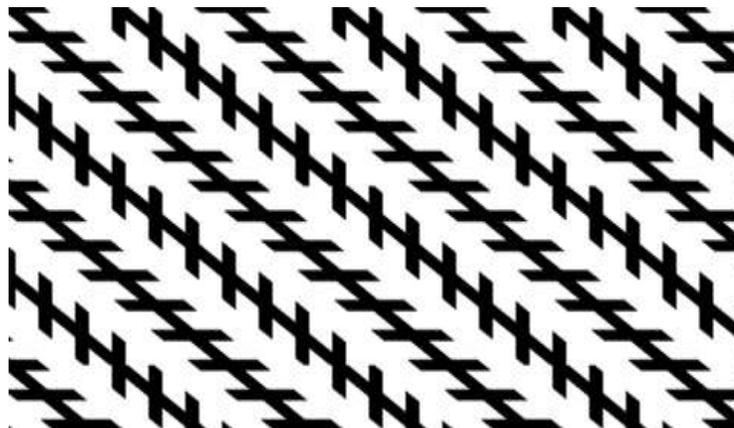
4.1 PONZO ILLUSION

The first type of illusion is the Ponzo illusion. This type of illusion describes the closeness of the objects with the increase in distance. As the objects fade from the starting distance they tend to merge at the horizon and appear more closer. This can be well illustrated in railway track. As we move our eyes on the railway track, the two parallel tracks seem to converge at end and also appear closer from the starting point. At times the length of one track where person is standing may seem to exceed than the other, but in reality both the tracks are equal in length and equidistant also.



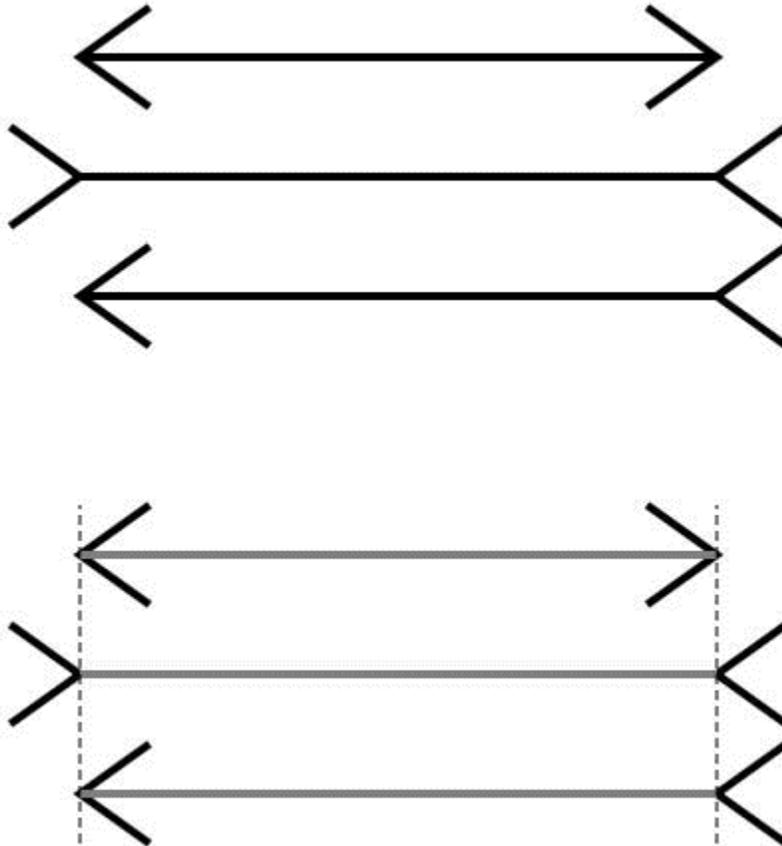
4.2. ZOLLNER'S ILLUSION

The second type of illusion is the Zollner's illusion. It states the influence of figure ground relationship in interpretation of the image by the brain. The abstract background of the figure tends to create uneasiness if eye contact is increased.



4.3. MULLER-LYER ILLUSION

It was first discovered in 1889 by F.C. Müller-Lyer. The perceptual error has then been gaining prominence and has been well investigated by various theorists.



In the image above, you could see lines parallel to each other but which line appears the longest? The response for majority of the people is the line with outwards arrow is longer than the line with inward arrow. But in reality, both the lines are equal. It is just the type of arrow that creates the illusion and hence, arrow with outward face is perceived longer than the inward face.

An explanation to the phenomena was provided by R.H. Day. He proposed that error occurs due to the difference between the length of the line and the length of the figure. The length of the entire figure increases as a result of outward fins in comparison to entire length of the figure with inward fins, having the length of the line as same.

4.4 MOON ILLUSION

This type of illusion is an example of optical illusion and is also referred at times as ‘the moon effect’. In this type of illusion, the angular size of the moon is viewed at times to be twice more when near the horizon than high in the sky. Moon at a height appears to be small whereas moon somewhere down appears to be a big huge object in the visual field.

Few common theories for explaining such illusions are discussed here.

Apparent distance theory: this theory aims to explain the phenomena in light of the depth cues. When we see the moon near the horizon, we view it in existence of various depth cues such as trees, mountains and other scenic components. However, when we view the moon high in sky, there is a complete absence of such depth cues and thus the moon is perceived smaller in the clear sky.

Angular size-contrast theory: this theory focuses on the relative figure ground relationship. It proposes that when moon is near the horizon, it is surrounded by various scenic objects which appear to be smaller. So the moon in this image tends to highlight itself amongst small objects and thus view large. In case of moon in high sky. It appears to be small as a figure in large background of the sky.

There has been lack of conformity over the idea plausible explanation of moon illusion. Other factors that contribute to the explanation are colour, atmospheric perspective and visual factors. According to the colour perspective, because the moon at the horizon emerges red in colour therefore it seems to be bigger. In case of atmospheric perspective, the moon appears to be big as a result of dust and smoke in the atmosphere. The visual factors explain the phenomena in light of ponzo illusion. As the distance increases, the object seems to be smaller. The true fact is that no one factor but many factors may contribute to the phenomena.

5. SUBLIMINAL PERCEPTION

The word ‘subliminal’ explains the phenomenon of responding to stimuli below the threshold of awareness (Johann Herbart, 1776-1841). It suggests that it occurs for all the sense modalities and involves sensation and reciprocation to used to a frail action or experience. The phenomena is

gaining importance as people's actions are believed to be strongly influenced by such unaware perceptions. Since such perceptions form a part of part of consciousness and determine thought behavior and action, hence its understanding is completely warranted.

To elucidate the phenomena, in a study, subjects were presented with fade visual (letters, digits etc) and auditory (whispered letters) stimuli to which subjects were not sure of perceiving them or not. Following, when the subjects were asked to recall the stimuli, responses confirmed the perception of the stimulus without conscious awareness of the individual to it. The results confirmed the perception of the stimuli without its conscious acknowledgement and its potential role in influencing decisions.

5.1. APPLICATION OF SUBLIMINAL PERCEPTION

Patients with Neurological damage: in case of patients with neurological deficits, this phenomena is quite commonly observed. The patients tend to assert that they have not seen a particular stimuli but conversely, they tend to strongly react to the same stimuli. Again, the perception of the stimuli happens without conscious awareness of it.

In case of blind sight patients, limited visual field as a result of lesion to visual cortex results in unacknowledged perception of stimuli. For example, absence of quadrant in the visual field as a result of damage may be expected to loss of information of the same. But surprisingly, the patients are able to accurately guess the size and shape of the absent quadrant

In case of people who suffer with face agnosia, they are not able to retain the structure of the face to whom they may be talking to. However, when asked to identify the name with face, they may do it accurately. Such people are not able recall the features of the face in awareness but tend to respond correctly to the information associated with it.

Advertising: The phenomena is well used in the field of advertising where certain messages who are not given conscious attention still tend to impact the decisions of the people. For example, when we walk over the roads, there can be various hoardings that talk about losing weight or women helpline. We may not consciously attend to and register the information but when we are asked about them we may be able to respond by stating the location or the area where we saw the hoarding. This has also been well used as a marketing strategy to enhance unaware perception and its role in determining buyer's behavior.

6. SUMMARY

- An illusion refers to unique perceptual experiences in which information are received from the “real” external stimuli.
- There are different causes of illusions namely: similarity, expectancy and subjective factors.
- Illusions are categorized into different types that are: Ponzo illusion, Zollner’s illusion, Müller-Lyer illusion and Moon illusion.
- The first type of illusion is the Ponzo illusion, stating the appearance of the objects as smaleer when they move farther from the standing point.
- The second type of illusion is the Zollner’s illusion, illutarting the figure ground relationship influencing the perception.
- Müller-Lyer illusion happens as result of diiference in the total length of the figure attributed the type of arrow in comparison to the length of line which is same for both.
- A moon illusion is an optical illusion in which the moon appears larger near the horizon than it does while higher up in the sky.
- The word ‘subliminal’ explains the phenomenon of responding to stimuli below the threshold of awareness. It suggests that it occurs for all the sense modalities and used to describe situations that consist of weak stimuli.
- Application of subliminal perceptions is seen in the area of advertising and in the patients who have neurological damage.