UNIT 3  PERCEPTION: MEANING, LAWS, PERCEPTUAL CONSTANCIES AND FACTORS AFFECTING PERCEPTION*

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3.0 INTRODUCTION

I pondered deeply, then, over the adventures of the jungle. And after some work with a colored pencil I succeeded in making my first drawing. My Drawing Number One. It looked like this:

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I showed my masterpiece to the grown-ups, and asked them whether the drawing frightened them.

But they answered: “Frighten? Why should any one be frightened by a hat?”

My drawing was not a picture of a hat. It was a picture of a boa constrictor digesting an elephant. But since the grown-ups were not able to understand it, I made another drawing: I drew the inside of a boa constrictor, so that the grown-ups could see it clearly. They always need to have things explained. My Drawing Number Two looked like this:

The above excerpt is from the book, “The Little Prince” (1943), by Antoine de Saint Exupery. As illustrated above, it is not necessary that our understanding of a stimulus will be shared by others also. The world around us is complicated and so is the process of knowing it. The psychological process responsible for our interpretation of the world is known as perception. In this unit, those psychological processes which we use to understand our world will be discussed. Specifically, this unit will discuss the process of perception, sensation, role of attention in the perceptual process, and factors affecting perception.

### 3.1 OBJECTIVES

After studying this Unit, you will be able to:

- Explain the process of perception;
- Have an understanding of the factors affecting perception;
- Describe the concept of sensation;
- Explain the types of perceptual consistencies;
- Outline the basic principles of organization using Gestalt theory; and
- Understand the basis of perceptual illusion.

### 3.2 PERCEPTION: WAY TO UNDERSTAND THE WORLD

Perception is a set of process, which helps us in understanding the world around us. Every second we encounter numerous stimuli. Take a look around the room in which you are sitting right now. What can you see? Walls, the colour of the
walls, fan, light, the sound of the fan, books kept in the racks and many more things. Your awareness about all those stimuli is the result of a higher mental process called “perception”. Perception helps us in interpreting our world and thus helps us in making an appropriate decision, from what dress to wear to how to cross the road. Therefore, perception is a process of selecting, organising and interpreting the sensory information based on previous experiences, other’s experiences, need or expectation.

Now, close your eyes and try to visualize your kitchen. What do you remember about the kitchen of your house? Not everything. Right? Why is it so that you are not able to visualise your kitchen with 100 per cent accuracy? Since, our brain is not capable of attending every single detail of the world; it selectively attends only some stimuli. Let us take another example. How do you cross a busy road? You selectively pay attention to some stimuli (traffic signal, the speed of the vehicle or people on the road) and then cross the road. While crossing the road, you have very less awareness about the buildings or number of trees around the road. Why? Because it is not necessary for the action, you need to perform at that time, i.e., while crossing the road safely. The act of crossing a road safely can be explained using the process of perception. First, you select the stimuli (traffic signal, moving vehicles, and people) you need to pay attention to and block other stimuli (parked vehicles, trees, conversation with your fellow pedestrian etc.). In this way, your brain tries to focus on the task. Then, your brain organises the scene, and lastly, it figures out when it will be appropriate to cross the road safely. Any mistake during these steps can cause an accident. So broadly speaking, the process of perception involves three steps when it encounters stimuli viz. (i) selection, (ii) organization and, (iii) interpretation. These stages of the process of perception have been discussed in detail in the following section.

3.2.1 Stages of Perception

This section will explain in details the stages involved in perception as well as the factors affecting these stages.

Stage I: Selection

The first stage of perception is “selection”. Since our brain has limited capacity, therefore, it cannot attend to all stimuli. We unconsciously or consciously select some stimuli and ignore others. The selected stimulus becomes the “attended stimulus”. Now, look at the following two figures. What do you see?

![Fig. 3.1: Rabbit or Duck?](http://mathworld.wolfram.com/Rabbit-DuckIllusion.html) ![Fig. 3.2: Vase or Human Faces?](https://pxhere.com/en/photo/1283860)

Source: (Figure 3.1) [http://mathworld.wolfram.com/Rabbit-DuckIllusion.html](http://mathworld.wolfram.com/Rabbit-DuckIllusion.html)  
Source: (Figure 3.2) [https://pxhere.com/en/photo/1283860](https://pxhere.com/en/photo/1283860)
Your interpretation of these two figures depends on your organisation of the information, and organisation of the information, in turn, depends on your attention. Take for example, the second figure. Some people give more attention to the white portion and thus see two human faces, while some focus their attention on black part and perceive it as a vase. These differences in answer suggest that individual differences also occur in the process of perception.

Stage II: Organization

In this stage, stimuli are arranged mentally in a meaningful pattern. This process occurs unconsciously. Many principles have been proposed to explain the process of organisation. Section 2.4 discusses the Gestalt principles of organisation. It will help you understand how humans naturally organize stimuli to make a meaningful pattern and thus interpretation.

Stage III: Interpretation

In this last stage, meaning is assigned to the organized stimuli. Interpretation of the stimuli is based on one’s experiences, expectations, needs, beliefs and other factors. Thus, this stage is subjective in nature and the same stimuli can be interpreted differently by different individuals.

3.2.2 Theoretical Approaches to Perception

Two separate theoretical approaches have been proposed by psychologists to explain the process of perception. One is known as “Top-down processing approach” and, other is known as “Bottom-up processing approach”.

Table 3.1: Theoretical approaches to perception

<table>
<thead>
<tr>
<th>Bottom-up processing</th>
<th>Top-down processing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process of perception is direct.</td>
<td>Process of perception is indirect.</td>
</tr>
<tr>
<td>Perception is a data driven process i.e., stimuli carries sufficient information to be interpreted meaningfully and we don’t need to rely on our experiences.</td>
<td>Perception is an experience driven process i.e., stimuli don’t have sufficient information to be interpreted meaningfully and therefore, we need to rely on our experiences.</td>
</tr>
<tr>
<td>J. J. Gibson was one of the strongest advocate of this view.</td>
<td>Richard Gregory was the strongest advocate of this view.</td>
</tr>
</tbody>
</table>
A closely related term to perception is “sensation”. Sensation is the first contact we establish with our physical environment. “It focuses on describing the relationship between various forms of sensory stimulation (including electromagnetic, sound waves, pressure) and how these inputs are registered by our sense organs (the eyes, ears, nose, tongue, and skin)” (Baron, 2001, pp. 85). Therefore, the sensation can be understood as the process of gathering information about the environment using our senses and then transmitting it to the brain for further process, i.e., perception. The process of perception, which occurs unconsciously, will interpret this sensory information to make a sense of our world.

### 3.3.1 Process of Sensation

The process of sensation consists of three steps. The first step is **reception** – the process of receiving information in the form of light, heat or other physical energy by our sense organ using specialised sensory receptors cells. The next step is known as **transduction** – the process of converting received physical energy into electric impulse or energy which refers to the language which can be interpreted by our brain and nervous system. In the last step, with the help of nerve fibres these converted electric impulse travels to our nervous system for interpretation.

**Fig. 3.4: Process of sensation**

Retrieved from https://www.tes.com

### 3.4 ROLE OF ATTENTION IN PERCEPTION

The dish antenna we use in our home receives all available signals from the satellite but the tuner of the television-set selects signal according to our wishes. Similarly, our senses can register numerous stimuli at a given time but attentional processes help us in selecting relevant stimuli responsible for perception. Following are some important functions of attention in context of perception:

- **Selective attention**: The most important function of attention is *selectivity*. It refers to a process by which attention is focused on stimulus of ongoing interest, while ignoring other irrelevant stimuli. Selective attention acts as a filter.
Perception

- **Sustained attention**: It is the ability to attend to a stimulus for a longer period of time without being distracted. Job of looking at a radar screen requires sustained attention. Our attentional process helps us in doing this kind of monotonous jobs.

### Self Assessment Questions (SAQ-I)

- State whether the following are ‘True’ or ‘False’
- 1) Interpretation of the stimuli is based on one’s experiences, expectations, needs, beliefs and other factors. ........................
- 2) The Bottom up processing approach says that the process of perception is indirect..........................
- 3) Broadly speaking, the process of perception involves two steps. .............
- 4) Our senses can register numerous stimuli at a given time. ..................
- 5) In the stage of organization the stimuli are arranged mentally in a meaningful pattern..................

### 3.5 LAWS OF ORGANIZATION: GESTALT PRINCIPLES

In the early 20th century, three German psychologists Max Wertheimer, Wolfgang Köhler and Kurt Koffka proposed new principles for explaining perception called as **Gestalt principle**. According to these psychologists, the process of perception does not involve perceiving an array of stimuli as an object but it involves our tendency to seek a form or pattern in it. The literal meaning of the word *Gestalt* is form or configuration. The basic premise of Gestalt psychology is that ‘whole is different from the sum of its part’. Based on this basic premise, Gestalt psychologists proposed a number of principles or laws to explain the process of perceptual organisation i.e., how we perceive smaller units of stimuli as a whole, having a particular pattern. In the following section, let us discuss some important Gestalt laws of perceptual organisation but before doing so, can you find thirteen faces in the following picture?

![The Forest Has Eyes by Bev Doolittle (1984)](http://www.greenwichworkshop.com)

**Source**: http://www.greenwichworkshop.com
• **Figure-ground Relationship**

![Figure-ground Relationship Example](https://www.tes.com)

This principle states that we have a tendency to segregate our world in the form of figure and ground. Figure is that part of stimuli which has our focus of the visual field, whereas the ground is background. Figure has a definite shape and is better remembered whereas; background is shapeless and has no limits. Now look at the Figure 6, what do you see? Two people or two pieces of chess (two queens and one bishop)? When you focus on people, chess pieces disappear in the background and when you focus on the chess pieces, people become the background.

### 3.5.1 Law of Proximity

![Law of Proximity Example](https://courses.lumenlearning.com)

In order to perceive stimuli meaningful, stimuli which are closer to each other are perceived by us belonging to one group. Due to this reason, people tend to see following circles as cluster or group rather than individual circles. Our brain tends to group large elements as one to make us interpret more easily.

*Source: https://www.tes.com*

*Source: https://courses.lumenlearning.com*
### 3.5.2 Law of Similarity

This principle states that stimuli similar to each other are grouped together. For instance, in the Figure 8, we tend to group circles based on its colours. In real life also, we use this principle extensively. For example, during a cricket match, we tend to group players based on the colour of their jersey.

**Fig.3.8: The Gestalt Principle of Similarity**

*Source:* [https://www.verywellmind.com](https://www.verywellmind.com)

### 3.5.3 Law of Continuity or Good Continuation

It refers to our tendency to perceive figures in continuation rather than in parts. This principle is exhibited more in the perception of line. Figure 9 is generally perceived by us as a line instead of separate circle.

**Fig.3.9: The Gestalt Principle of Continuity**

*Source:* [http://art.nmu.edu](http://art.nmu.edu)

### 3.5.4 Law of Closure

Following its name, this law should not be confused with the law of proximity. This law states that we have a tendency to perceive stimuli as closed shapes even with some missing parts.

**Fig.3.10: The Gestalt Principle of Closure**

*Source:* [https://www.logodesignlove.com](https://www.logodesignlove.com)
3.5.5 Law of Common Region/Common Fate

This principle states that stimuli moving in similar directions are perceived as belonging to the same group, as shown in Figure 3.11.

3.5.6 Law of Good Form/Pragnaz

The word Pragnaz is a German in origin, meaning “good figure”. This principle is also called as “law of good figure”. According to this principle, out of all possible ways of grouping stimuli, we tend to group stimuli in the simplest and stable shape. Thus, we can say that simpler forms are more perceived by us. For example, instead of perceiving Figure 12, as consisting of five circles, we tend to perceive it as a symbol of Olympics.
3.6 PERCEPTUAL CONSTANCY

Perceptual constancy is a remarkable feat of our perceptual ability to perceive familiar stimuli as constant (with reference to size, shape, colour and brightness), irrespective of the change in the environment, location and characteristics of the stimuli. There are basically three types of perceptual constancies: size, shape and colour. In the following section each type of constancy will be discussed in brief.

3.6.1 Size Constancy

![Fig.3.13: An example of size constancy](https://www.flickr.com)

Our retinal image of the people standing in this picture is very small but all thanks to the phenomenon of the size constancy, our brain perceive them as people of normal size.

3.6.2 Shape Constancy

As the door swings towards us, its shape changes and so does our retinal image of the door, but still we perceive the shape of the door as same due to shape constancy. See Figure 3.14.

![Fig. 3.14: An example of shape constancy](https://www.flickr.com)

*Source: Atkinson & Hilgard (2009)*
3.6.3 Colour or Brightness Constancy

It is our ability to perceive the colour and brightness of stimuli constant even with the change in the wavelength of the light at our retina. For instance, in Figure 15, we perceive the colour and brightness of the rose constant.

3.7 FACTORS AFFECTING PERCEPTION

3.7.1 Effect of Motivation or Need

Motivation always plays a vital role in various psychological processes including perception. You must have observed that when you feel hungry, the smell of the food catches your attention more easily than when you are full. Many experimental studies have also reported the same effect. In a classic experiment, Stanford (1936) reported that hungry participants perceived ambiguous stimuli more as food-related stimuli than non-hungry participants. Similarly, in a recent study, Changizi and Hall (2001) demonstrated that your need for thirst could also affect perception.

3.7.2 Effect of Expectation or Perceptual Expectancy

Perceptual expectancy is a person’s readiness or a predisposition to perceive things in a particular way.

In a classic experiment, Bruner & Minturn (1955) illustrated the role of expectation in our perception. In one condition he showed his participants, an ambiguous figure of ‘13’ in the context of numbers like this;

![Fig. 3.16](image)

In the second condition he showed the same ambiguous figure of ‘13’ in the context of alphabets like this;
In the first condition, participants perceived the ambiguous stimulus as 13 while in the second it was perceived as B. The ambiguous stimulus in both conditions was same but interpreted differently due to participants’ expectation.

In another classical study, Bugelski and Alampay (1961) used an ambiguous picture of the ‘rat-man’, as shown in figure 18. This picture was presented in two conditions. In one condition, participants were first exposed to animal picture and then to the ambiguous ‘rat-man’ picture. Whereas, in another condition participants were first exposed to neutral pictures followed by the picture of ‘rat-man’. Experimental condition in which participants were exposed to animal picture perceived more this ambiguous picture as a rat than in the later condition.

3.7.3 Effect of Emotions

What do you think can emotions affect your perceptual ability? Suppose, if you are a fan of a particular IPL team and during a match, the umpire made a call against your favourite team. Then it’s more likely that you will perceive that umpire as partial. Why? Because you believe that your team is perfect and it cannot make any mistake. This example shows that your emotion for your favourite team is distorting your perception of the reality. Emotions do not hamper your perception always. Many studies have demonstrated the relationship between emotion and perception. An important point which needs to be mentioned here is that emotion does not always hamper your perception. Sometimes it facilitates also. Studies have suggested that when perception task is irrelevant to emotions it hampers your performance. Whereas, when your perception task is relevant to emotions, it facilitates the performance (Dodd, Vogt, Turkileri, & Notebaert, 2016; Compton et al., 2003). However, in a recent study, it was reported that emotions not only affect one’s perception but also influence the working memory (Hur, Iordan, Dolcos & Berenbaum, 2017).
### 3.7.4 Effect of Stimulus Characteristic

You may have noticed that the horns used by heavy trucks usually have high frequency, high pitch and high volume. Why? Just to grab your attention. Studies have shown that those stimuli which sound, taste, look or feel different, grabs our attention more than other stimuli and thus affect our perception. According to the evolutionary psychologist, this property has a survival purpose. It has helped humans in identifying danger.

### 3.7.5 Effect of Experience

![Flamingo shaped pen](https://www.amazon.in)

Prior experience plays an important role in the way we interpret stimuli; it shapes your perception. For example, if you mistakenly perceive a rope as a snake in the dark, then your previous experience is guiding your perceptual process. What do you see in the above picture? A Flamingo shaped pen, right? Even though this is not a typical pen, but you perceive it as a pen because of your previous exposure.

### 3.7.6 Effect of the Culture

![Hand gesture referring to perfect](http://westsidetoastmasters.com)

Culture provides structure, guidelines, expectations, and rules to help people understand and interpret behaviors. Ethnographic studies suggest there are cultural differences in social understanding, interpretation, and response to behavior and emotion. Cultural scripts dictate how positive and negative stimuli should be interpreted. Now look at the following hand gesture and interpret it. What does it mean?

In India, the illustrated hand gesture refers to beautiful or perfect. But in Mediterranean countries, it refers to sexual insult whereas, in Japan, this gesture
Perception relates to money. This example suggests that interpretation of a stimulus changes with the change in the culture.

Self Assessment Questions (SAQ-II)

Fill in the following blanks:

1) ................. provides structure, guidelines, expectations, and rules to help people understand and interpret behaviours.

2) ................ plays an important role in the way we interpret stimuli.

3) ................ always plays a vital role in various psychological processes including perception.

4) As the door swings towards us, it shape changes and so does ....................... image of the door.

5) The..................principle states that stimuli similar to each other are grouped together.

3.8 LET US SUM UP

In this unit, all relevant topics related to perception were covered. The unit started with an explanation to the process of perception followed by an introduction on sensation. Further, the role of attention in perception was also explained. The various perceptual constancies (size, shape, colour, distance) followed by various factors affecting the perceptual process were discussed accordingly. In the context of Gestalt philosophy, the different principles of organising stimuli were also discussed at the end.

3.9 UNIT END QUESTIONS

1) What do you understand by perception? Define it and describe the stages of the perceptual process.

2) Differentiate between perception and sensation

3) Describe the role of attention in perception.

4) What do you understand by perceptual constancy and describe any two types of constancies?

5) What is Gestalt theory of perception? Describe any five Gestalt principles of organization.

6) Explain perceptual expectancy and describe how it can affect one’s perception.

3.10 GLOSSARY

**Perception**: It is a process of selecting, organising and interpreting the sensory information based on previous experiences, other’s experiences, need or expectation.

**Sensation**: The process of receiving information from the environment using your five senses and sending it
to brain for further interpretation, is known as sensation.

Perceptual Constancy: It is our ability to perceive the shape, size and colour of the stimuli as constant even though in reality the stimuli change with reference to these characteristics.

Selective Attention: It refers to a process by which attention is focused on stimulus of ongoing interest, while ignoring other irrelevant stimuli. Selective attention acts as a filter.

Sustained Attention: It is the ability to attend to a stimulus for a longer period of time without being distracted.

Gestalt Principle: The literal meaning of the word *Gestalt* is form or configuration. This principle states that ‘whole is different from the sum of its part’.

Law of Pregnaz: According to this principle, out of all possible ways of grouping stimuli, we tend to group stimuli in the simplest and stable shape. Thus, we can say that simpler forms are more perceived by us.

### 3.11 ANSWERS TO SELF ASSESSMENT QUESTIONS (SAQ)

**SAQ-I**

1) True
2) False
3) False
4) True
5) True

**SAQ-II**

1) Culture
2) Prior experience
3) Motivation
4) our retinal
5) law of similarity

### 3.12 REFERENCES AND SUGGESTED READINGS


Perception


References for Images


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An example of colour constancy. Retrieved March 29, 2018, from https://www.flickr.com/photos/47544453@N08/24272762519/in/album-72157661659836884/

A Flamingo shaped pen. Retrieved March 29, 2018, from https://www.amazon.in
