CHAPTER 2

SENSATION AND PERCEPTION

- Sensation is the process whereby stimulation of receptor cells in the eyes, ears, nose, mouth, and surface of the skin sends nerve impulses to the brain.
- Examples: Color, brightness, the pitch of tone or a bitter taste.
- Sensation is the process that detects the stimulus from one‘s body or from the environment

How different is sensation from perception?

- Perception is the process that organizes sensations into meaningful patterns.
- It is the process whereby the brain interprets sensations, giving them order and meaning.
- Thus, hearing sounds and seeing colors is largely a sensory process, but forming a melody and detecting patterns and shapes is largely a perceptual process.

Why do we say “largely” in the above expression?

- We say largely because in everyday life, it is almost impossible to separate sensation from perception.
- As soon as the brain receives sensations, it automatically interprets or perceives them, and without sensations of some kind perception could not occur.

Can you mention examples showing the difference between sensation and perception?

1. the black marks and letters in this page
2. A case study presented by neurologist Oliver Sacks (Consult page 24 as necessary)

The sensory laws: Sensory thresholds and sensory adaption

- Sensory threshold is the minimum point of intensity a sound can be detected.
- There are two laws of sensory threshold: The law of absolute threshold and the law of difference threshold.

The absolute threshold

- It is the minimum amount of stimulation a person can detect or limen (a threshold below which a stimulus is not perceived or is not distinguished from another)
- For example, a cup of coffee would require a certain amount of sugar before you could detect a sweet taste. Because the absolute threshold for a particular sensory experience varies.

Cont.

- Psychologists operationally define the absolute threshold as the minimum level of stimulation that can be detected 50 percent of the time when a stimulus is presented over and over again.
- Thus, if you were presented with a low intensity sound 30 times and detected it 15 times, that level of intensity would be your absolute threshold for that stimulus.

Cont.

- Researchers assume that the detection of a stimulus depends on both its intensity and the physical and psychological state of the individual.
- One of the most important psychological factors is the response bias-how ready the person is to report the presence of a particular stimulus.

Absolute thresholds

Vision

A single candle flame from 30 miles /48 km on a clear night

Hearing

The tick of a watch from 20 feet/6 meter in total quiet

Smell

One drop of perfume in a 6-room apartment

Touch

The wing of a bee on the cheek, dropped from 1 cm

Taste

One teaspoon of sugar in 2 gallons /7.7 liters of water

The difference threshold

- It is defined as the minimum amount of change that can be detected.
- For example, a cup of coffee would require a certain amount of additional sugar before you could detect an increase in its sweetness.
- Similarly, you would have to increase the intensity of the sound from your tape recorder a certain amount before you could detect a change in its volume.

Cont.

- Psychologists formally define the difference threshold as the minimum change in stimulation that can be detected 50 percent of the time by a given person.
- This difference in threshold is called the just noticeable difference (jnd).

Cont.

- The amount of change in intensity of stimulation needed to produce a jnd is a constant fraction of the original stimulus. This became known as Weber‘s law.
- Examples (see page 25 of the module)

Sensory Adaptation

- It is defined as the tendency of our sensory receptors to have decreasing responsiveness to unchanging stimulus.
- Example 1: when vibrations repeatedly stimulate your skin, you stop noticing them.
- Example 2: after diving into a swimming pool, you might shiver. Yet a few minutes later you might invite someone to join you saying, “The water is fine”

Perception

- It refers to the way sensory information is organized, interpreted, and consciously experienced.

Selectivity of perception: Attention

- Input from the environment was coming into your ears all the time. In fact you may be attending to one of such incoming in put ignoring the other noises. Such selective perception is called attention.

Cont.

- Attention is therefore the term given to the perceptual process that selects certain inputs for inclusion in your conscious experience, or awareness, at any given time, ignoring others.
- The selectivity of perception implies, among other things, that our field of experience is divided into what is known as “Focus” and “Margin.”

Cont.

- Events or stimuli that you perceive clearly are the focus of your experience and other items or stimuli that you perceive dimly or vaguely are in the margin of your attention.
- You may be aware of items in the marginal field but only vaguely or partially.
- Attention shifts constantly.
- What is in the focus of your attention one moment may be in margin; and what is in the margin may become in your focus.

Cont.

- Paying attention is a function of two factors: factors external to the perceiver and factors internal to the perceiver.
- External factors refer to factors that are generally found in the objects or stimuli to be perceived.
- Some of the external characteristics of objects that determine whether you are going to attend them or not are **size** and **intensity**, **repetition**, **novelty** (or newness), and movement.

Cont.

- Other things being constant, **bigger** and **brighter** stimuli are more likely to capture your attention than **smaller** and **dimmer** objects.
- That is why announcements and notice are written in big and block letters. In the same way, people who dress bright colored clothes tend to capture your attention.
- Repetition is the second factor. You are more likely to attend to stimuli that repeatedly or frequently occur in your perceptual field.

Cont.

- That is why slogans, advertisings, and announcement are repeated continuously to audiences and spectators.
- The third factor of attention is novelty-the extent to which a stimulus creates a contrast with the rest objects in the environment.
- The fourth factor is movement. Moving objects tend to get your attention more than non-moving or stagnant objects.

Internal psychological states

- Psychologists have identified two important psychological factors: **Set or expectancy** and **motives** or **needs.**
- Set refers to the idea that you may be “ready” and “Primed for” certain kinds of sensory input. Example: consider a husband (consult page 29 for full info.)
- Motives and needs are the second psychological factors influencing you as an observer.

Cont.

- People who are hungry, thirst, or sexually aroused are likely to pay attention to events in the environment, which will satisfy these needs.

Form perception

- The meaningful shapes or patterns or ideas that are made perhaps out of meaningless and discrete or pieces and bites of sensations refer to form perception.
- To perceive forms (meaningful shapes or patterns), you need to distinguish a **figure** (an object) from its **ground** (or its surrounding). Let us look at this idea further.

Figure-Ground Perception

- There can be a shift in you perception of figure and ground such that the figure may become the ground and vice versa.

Gestalt principles cont.

Related Pictures

Compiled by: Simegn S.

Organization in form Perception

- When several objects are presented in the visual field, we tend to perceive them as organized into patterns or groupings (Gestalt psychologists).
- Gestalt psychologist said “the whole is more than the sum of its parts.”
- This simply means that what is perceived has its own new properties, properties that emerge from the organization, which takes place.

Laws of perceptual organization

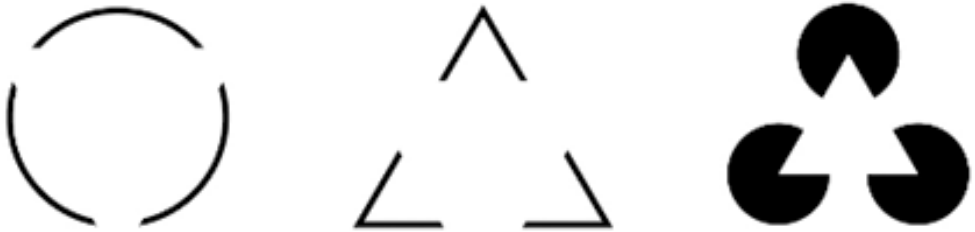
Form Perception:
Gestalt principles

Proximity

Things close to one another are grouped together

Closure

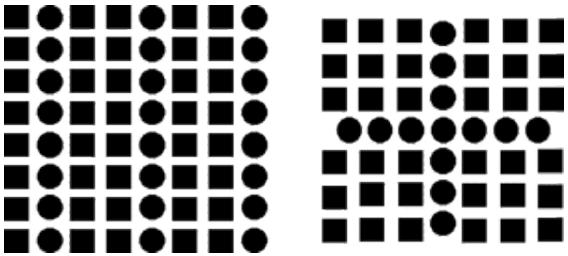
The brain tends to fill in gaps to perceive complete forms

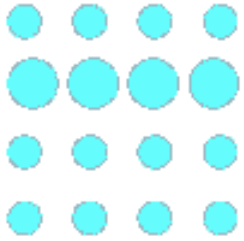


Form Perception:
Gestalt principles cont.

Similarity

Things that are alike are perceived together

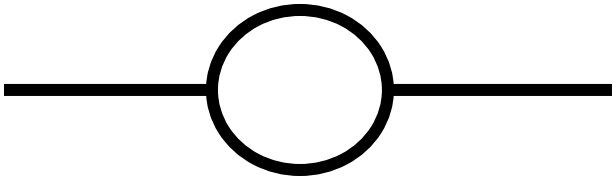




Similarity: Size

Continuity

Seeing continuity in lines that could be interpreted as either continuous or abruptly shifting in direction.



Depth perception

- It is expressed as the ability to judge the distance of objects.

Cont.

- **motion parallax,** the tendency to perceive ourselves as passing objects faster when they are closer to us than when they are farther away.

Cont.

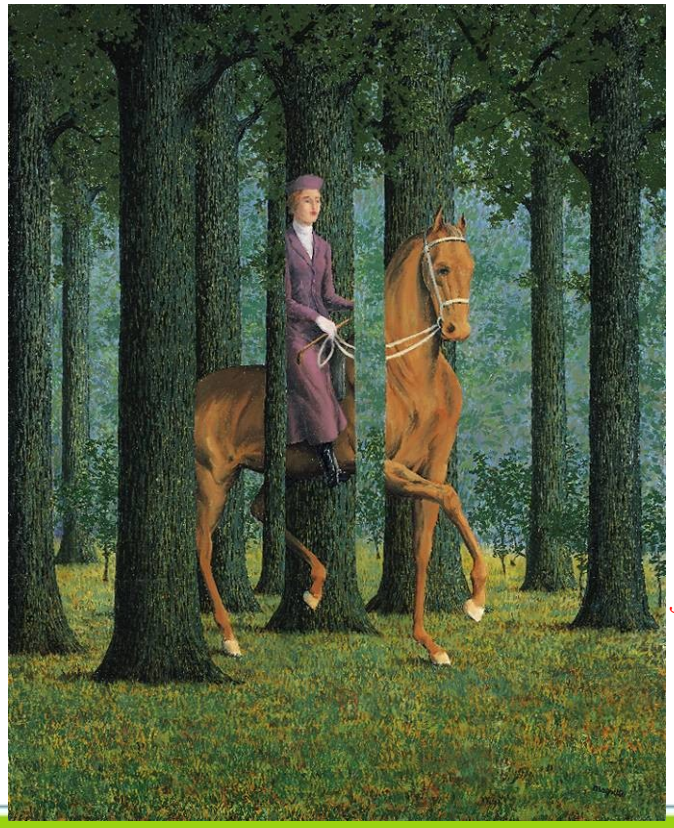
- You will notice this when you drive on a rural road. You perceive yourself passing nearby telephone poles faster than you are passing a farmhouse.
- The remaining monocular cues are called **pictorial cues** because artists use them to create depth in their drawings and paintings.
- Leonardo da Vinci (consult page 35 of the module for the details)

Cont.

- An object that overlaps another object will appear closer, a cue called **Interposition.**
- Because your psychology professor overlaps the blackboard, you know that she or he is closer to you than the blackboard is.

Monocular Cues

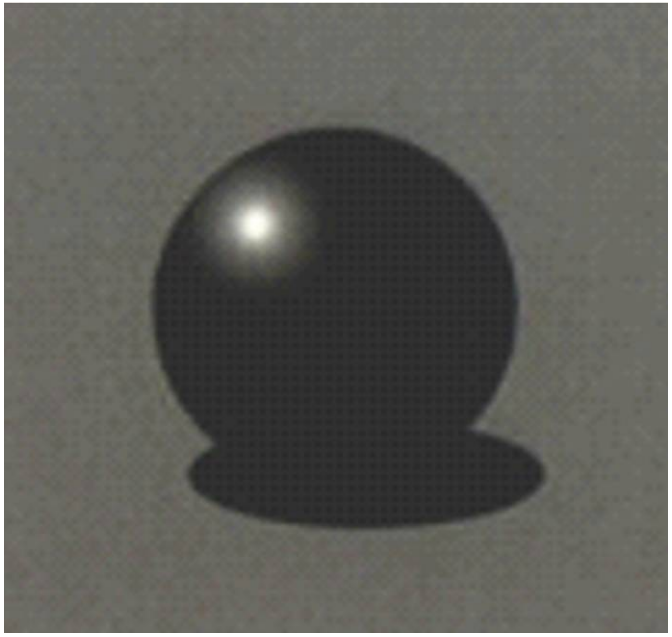
Interposition: Objects that occlude (block) other objects tend to be perceived as closer.

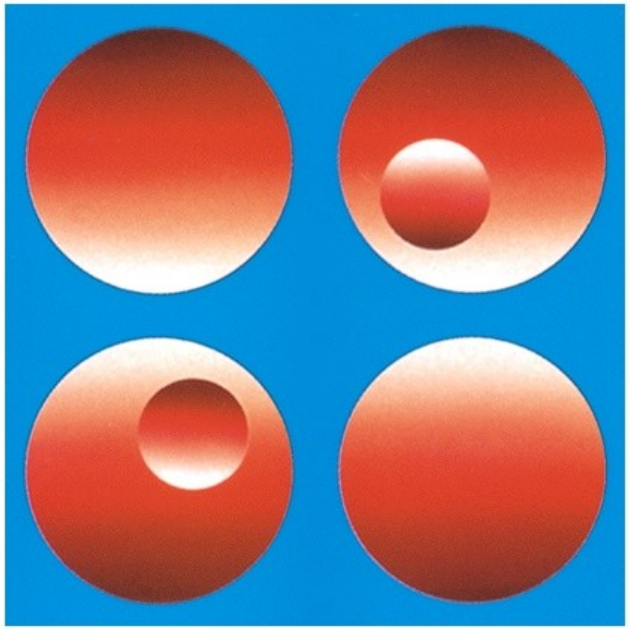


Rene Magritte, *The Blank Signature,* oil on canvas, National Gallery of Art, Washington. Collection of Mr. and Mrs. Paul Mellon. Photo by Richard Carafelli.

Monocular Cues

Light and Shadow: Nearby objects reflect more light into our eyes than more distant objects. Given two identical objects, the dimmer one appears to be farther away.





Size-Distance Relationship

Both girls in the room are of similar height. However, we perceive them to be of different heights as they stand in the two corners of the room.

Both photos from S. Schwartzenberg/ The Exploratorium

Perceptual Constancies

1. **Size Constancy – perceive familiar objects as having a constant size even when its retinal image becomes larger or smaller as we get closer to or farther from it.**
2. **Shape Constancy – perceive familiar objects as having constant shape even though the shape of the retinal image produced by an object changes when our point of view changes.**

Perceptual Constancies

3. **Brightness Constancy** – see objects as having relatively constant brightness even though the amount of light they reflect changes as the over all level of illumination changes.
4. **Location Constancy** –perceive stationary objects as remaining in the same place despite the retinal image moves about as we move our eyes.
5. **Color Constancy** – perceive the color of objects as stable despite the changing illumination.

Is There Extrasensory Perception?

Perception without sensory input is called extrasensory perception (ESP). A large percentage of scientists do not believe in ESP.

Claims of ESP

1. Telepathy: Mind-to-mind communication. One person sending thoughts and the other receiving them.
2. Clairvoyance: Perception of remote events, such as sensing a friend's house on fire, and saying my uncle comes at this moment.
3. Precognition: Perceiving future events, such as a political leader's death.
4. Psychokineses –the ability to move objects with out touching them in any way.

Chapter three

LEARNING AND THEORIES OF LEARNING

- **Definitions of learning**

✓ *Learning is a relatively permanent change in behaviour occurring as a result of experience or practice*

The definition of learning comprises of the following basic concepts

- Learning is a change in behaviour
- This change in behaviour is relatively permanent
- It does not include change due to illness, fatigue, maturation and use of intoxicant.
- This permanent change in behaviour is not because of biological factors (like hormonal changes) that bring permanent changes in behaviour; but because of experience, or practice
- The learning is not directly observable but manifests in the activities of the individual

Characteristics of learning