Perceptual Organization

Module 16

Perceptual Organization

- Perceptual Illusions
- Form Perception
- Motion Perception
- Perceptual Constancy
Perceptual Illusions

To understand how perception is organized, illusions provide good examples. It is as good to study faulty perception as other perceptual phenomena.

Line AB is longer than line BC.

Tall Arch

Vertical dimension of the arch looks longer than the horizontal dimension when both are equal.

Illusion of a Worm

Figure on the right gives us the illusion of a blue hazy "worm" when it is nothing else but blue lines identical to the picture on the left.

OBJECTIVE 16-1 Explain how illusions help us understand some of the ways we organize stimuli into meaningful perceptions.
To perceive this figure in two dimensions takes a great deal of effort.

Perceptual Organization

When vision competes with other senses vision usually wins – a phenomenon called visual capture.

How do we form meaningful perceptions from sensory information?

We organize it. Gestalt psychologists showed that a figure formed a “whole” different than its surroundings.

Form Perception

Organization of the visual field into objects (figures) that stand out from their surroundings (ground).

OBJECTIVE 16-2| Describe Gestalt psychology’s contribution to our understanding of perception.

OBJECTIVE 16-3| Explain the figure-ground relationship and identify principles of perceptual grouping in form perception.
Grouping

Having discriminated figure from ground our perception needs to organize figure into meaningful form using grouping rules.

- Proximity
- Similarity
- Continuity
- Connectedness

Grouping & Reality

Usually grouping principles help us construct reality but at times lead us astray.

Depth Perception

Depth perception enables us to judge distances. Gibson and Walk (1960) suggested that human infants (crawling age) have depth perception. Even newborn animals show depth perception.

OBJECTIVE 16-4| Explain the importance of depth perception, and discuss the contribution of visual cliff research to our understanding of this ability.
Binocular Cues

Retinal disparity: Images from the two eyes differ. Try looking at your two fingers half an inch apart about 5 inches away. You will see a “finger sausage” as shown in the inset.

Binocular Cues

Convergence: Neuromuscular cues. When two eyes move inward (towards the nose) to see near objects, and outward (away from the nose) to see far away objects.

Monocular Cues

Relative Size: If two objects are similar in size, we perceive one that casts a smaller retinal image as farther away.

OBJECTIVE 16-5 | Describe two binocular cues for perceiving depth, and explain how they help the brain to compute distance.

OBJECTIVE 16-6 | Explain how monocular cues differ from binocular cues, and describe several monocular cues for perceiving depth.
Monocular Cues

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


---

Monocular Cues

**Relative Clarity:** Because light form distant objects passes through more air, we perceive hazy objects as farther away than sharp clear objects.

Monocling Fog

---

Monocular Cues

**Texture Gradient:** Indistinct (fine) texture signals increasing distance.

© Eric Lessing/Art Resource, NY
Monocular Cues

**Relative Height:** We perceive objects higher in our field of vision as farther away.

Monocular Cues

**Relative motion:** Objects closer to a fixation point move faster and in opposing directions to objects farther away from a fixation point, which move slower and in the same direction.

Monocular Cues

**Linear Perspective:** Parallel lines like railroad tracks, appear to converge with distance. The more the lines converge, the greater their perceived distance.
Monocular Cues

Light and Shadow: Nearby objects reflect more light to our eyes. Given two identical objects, the dimmer one seems further away.

Motion Perception

Motion Perception: Objects that tend to travel towards us grow in size and ones that move away shrink in size. The same is true when the observer moves to or from an object.

Apparent Motion

Phi Phenomenon: When lights flash at certain speed they tend to present illusions of motion. Neon signs use this principle to create motion perception.

OBJECTIVE 16-7 | State the basic assumption we make in our perceptions of motion, and explain how these perceptions can be deceiving.
Perceptual Constancy

Perceiving objects as unchanging even as illumination and retinal image change. Perceptual constancies include constancies of shape and size.

OBJECTIVE 16-8 | Explain the importance of perceptual constancy.

__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________

Size Constancy

Stable size perception amid changing size of the stimuli.

OBJECTIVE 16-9 | Describe the shape and size constancy, and explain how our expectations about perceived size and distance to some visual illusions.

__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________

Size-Distance Relationship

The distant monster and the top red bar appear bigger because of distance cues.

__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
Size-Distance Relationship

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

Ames Room

An Ames room is designed to give size-distance illusion.

Lightness Constancy

The color and brightness of square A and B are the same.

OBJECTIVE 16-10 | Discuss lightness constancy and its similarity to color constancy.
Color Constancy

Perceiving familiar objects as having consistent color, even if changing illumination filters the light reflected by the object.