Unit IV: Sensation & Perception

Ms. Justice
AP Psychology
Unit IV - Overview

16 – Basic Principles of Sensation & Perception
17 – Influences on Perception
18 – Vision
19 – Visual Organization & Interpretation
20 – Hearing
21 – The Other Senses
Unit IV: Sensation & Perception

Module 16
Basic Principles of Sensation & Perception
Module 16

Basic Principles of Sensation and Perception

Module Learning Objectives

16-1 Contrast sensation and perception, and explain the difference between bottom-up and top-down processing.

16-2 Discuss how much information we can consciously attend to at once.

16-3 Identify the three steps that are basic to all our sensory systems.

16-4 Distinguish between absolute and difference thresholds, and discuss whether we can sense and be affected by stimuli below the absolute threshold.

16-5 Explain the function of sensory adaptation.
How do we construct our representations of the external world?

To represent the world, we must detect physical energy (a stimulus) from the environment and convert it into neural signals. This is a process called sensation.

When we select, organize, and interpret our sensations, the process is called perception.
Sensory & Perceptual Processes

- **Bottom-up processing** - Analysis of the stimulus begins with the sense receptors and works up to the level of the brain and mind.
  - *We process this way when we have no prior knowledge: we start at the bottom and work our way up.*

- **Top-down processing** - Information processing guided by higher-level mental processes as we construct perceptions, drawing on our experience and expectations.
  - *We process this way when we have prior knowledge: we start at the top and have to work to process details.*
Our sensory and perceptual processes work together to help us sort out complex images.

“The Forest Has Eyes,” Bev Doolittle
Selective Attention
Selective Attention

• The focusing of conscious awareness on a particular stimulus.
• The cocktail party effect is an example of selective attention: the ability to attend to only one voice among many while also being able to detect your own name in an unattended voice.
• Selective attention shifts back and forth between tasks. There is a slight delay with each switch.
Inattentional Blindness

• The failure to see visible objects when our attention is focused elsewhere.
• We can also fail to notice changes in the environment. This is known as change blindness.
Video 2
Derren Brown: Person Swap
Transduction
Transduction is the transformation of stimulus energy (sights, sounds, smells) into neural impulses our brains can interpret.

What we see as visible light is but a thin slice of the whole spectrum of electromagnetic radiation.
Thresholds
Thresholds

**Absolute Threshold**: Minimum stimulation needed to detect a particular stimulus 50% of the time.
Subliminal Threshold

- **Subliminal Threshold**: When stimuli are below one’s absolute threshold for conscious awareness.

- While much of our information processing occurs automatically (sensation), claims of subliminal persuasion have been discounted through research.
Weber’s Law

Two stimuli must differ by a constant minimum percentage, to be perceived as different.

<table>
<thead>
<tr>
<th>Stimulus</th>
<th>Constant (k)</th>
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</thead>
<tbody>
<tr>
<td>Light</td>
<td>8%</td>
</tr>
<tr>
<td>Weight</td>
<td>2%</td>
</tr>
<tr>
<td>Tone</td>
<td>0.3%</td>
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Sensory Adaptation
Sensory Adaptation

• **Sensory adaptation** is the diminishing sensitivity to an unchanging stimulus.

• After constant exposure to a stimulus, our nerve cells fire less frequently.

• Sensory adaptation offers the freedom to focus on informative changes in our environment: We perceive the world not exactly as it is, but as it is useful for us to perceive it.

Put a band aid on your arm and after awhile you don’t sense it.