
Chapter 4 Sensation and Perception

Unit Overview:

Ψ People interpret the sensations of the world and through a process called transduction people make some sort of sense of the sensations. In this challenging chapter, students are introduced to the world of senses; such as visual, auditory, taste, body sensations, smell, and touch sensations. Perception is how people interpret these sensations. The laws of organization, the perception of movement, and depth perception as well as the laws of constancies help to later our perception of the sensations and is explored in this chapter.

Objective(s): The student will be able to:

- Ψ explain the difference between sensation and perception
- Ψ explain the different absolute thresholds
- Ψ differentiate the difference threshold and Weber's Law
- Ψ describe how the eye works and its properties
- Ψ explain the process of hearing and its properties
- Ψ explain the process of tasting, smelling, the skin and body senses
- Ψ list and explain the rules of perception
- Ψ explain the process of depth perception
- Ψ describe the different constancies in perception

Vocabulary

- Ψ **Sensation Perception**
- Ψ **Absolute Threshold**
- Ψ **Difference Threshold**
- Ψ **Pupil**
- Ψ **Lens**
- Ψ **retina**
- Ψ **Blind Spot**
- Ψ **Cochlea**
- Ψ **Auditory Nerve**
- Ψ **Olfactory Nerve**
- Ψ **Kinesthesia**
- Ψ **Vestibular Sense**
- Ψ **Closure**
- Ψ **Proximity**
- Ψ **Similarity**
- Ψ **Continuity**
- Ψ **Monocular Cue**
- Ψ **Binocular Cue**

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Ψ Retina Disparity

Lecture Support and Background and Background

Sensation and perception is the oldest field of psychology. When Wundt initiated his psychological laboratory in the last century, he and his co-workers did experiments on the limits and capacities of the various sensory organs. When they discovered that the organs varied tremendously in sensitivity, they had to move into the field of perception, which is the how the brain organizes information sent to it from the sensory organs.

The first question asked in Wundt's laboratory was: how much stimulation from the environment is necessary for a person to say that she has experienced any sensation at all? This is referred to as absolute threshold. The absolute thresholds for some of the traditional senses are in the PowerPoint. The other sensory threshold that attracted scientific attention was the difference threshold. How much do you have to change the intensity of the stimulus before you notice the difference? The jnd, or just noticeable difference, is defined as the smallest change in stimulation that can be detected 50% of the time. Weber's law says that the jnd is a constant fraction for each of the traditional senses. Using Weber's law, it is easy to identify the most sensitive and least sensitive sensory structures in humans. Hearing a change in pitch in the auditory sense has a Weber's fraction of .3%, while Weber's fraction for taste is 20%. Please notice the loudness of a sound; that has a larger Weber's fraction than pitch. In humans, therefore, hearing pitch is the most sensitive sense and taste is the least sensitive. All of the other senses fall between these extremes.

Video Support and Background

The Discovering Psychology Series with Dr. Phil Zimbardo
Sensation and Perception (30 min)

The Brain: Teaching Modules Second Edition
(8) *Visual Information Processing: Elementary Concepts (9:11 min)*
(9) *Visual Information Processing: Perception (8:45 min)*
(10) *Perception: Inverted Vision (5:04)*

PBS

Mystery of the Senses (each module-60 min)

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Day 1 Sensation and perception

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Before getting into Sensation and Perception, It's most important to stress the difference between sensation and perception. So, that's the lesson.

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Procedure:

Make a transparency of the 4.2 handout.

Do not allow students to see the transparency. Use post-Its to cover the different shapes. Placing the transparency on the overhead, remove one of the Post-Its to reveal a shape. Ask the students to describe the shapes and come up with any and all words to describe the shapes. Also ask them not to say a word about anything else they might see. When the students are done brainstorming about the shape, cover it up with a Post-It and move on to another shape. They can only talk about the shapes and what they look like. Do this for every shape on the transparency. There are five shapes on the transparency.

Shape One? sample answers include hat, doorbell, door protector

Shape two? sample answers include vise grips, floor plan, video monster

Shape Three? sample answers include dripping faucet, profile of a house,

Shape Four? sample answers include arrow, tree, top

Shape Five? sample answers include Native-American, a “thumbs-up,”

The shapes are the sensation. In perception, people try to organize and make sense of the different shapes. Students make the shapes come forward and they are called the figures, and the white is the background. Basically this is how people learn to read. The letters come forward and the page is the background.

Now take all the Post-Its off the transparency and place it on the overhead projector. Most students will continue to study the different shapes. At some point someone will notice if the background or the white parts of the transparency come forward and the shapes go into the background, one sees something much different. The shapes are actually the background and the white forms what we call letters. String those letters together and they form a word. The perception changes!! The transparency spells out the word “FLY!” Sensation is the basically what the senses take-in. perception is how we organize and give meaning to the shapes we see.

Have the students begin writing out the objectives to S.H. 4.2 Chapter Objectives and the Graphic Organizer for Chapter 4.

Materials list:

S.H. 4.1 Graphic Organizer

S.H. 4.2 Topic Objectives

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Suggested Teaching Strategies:

While they are grumbling, about writing out the objectives tell them you want them to hear a couple of songs. Play two songs in class to illustrate the concepts of sensation and perception as above. The first song is by Eminem. The other song is by Tori Amos.

The song being sung by Eminem and Tori Amos is “97 Bonnie and Clyde.” You may want to download the lyrics and make an overhead of them for the students to read. The same song is sung by Eminem and Tori Amos, but she changes the story teller. She sings the song as if she is the mom being murdered by her husband while her child is nearby.

The guys usually think the Eminem version is very cool, until they read the lyrics and are surprised. They understand the beat but do not necessarily know the words. The Tori Amos version is very spooky and even threatening. It’s hard to believe that both people are singing the same song! It’s an excellent demonstration of sensation and perception. The mood of the music sends two distinct perceptions of the lyrics.

Lecture Support and Background:

To have students understand the differences between sensation and perception is very important. There is a book called *Zoom*, ISBN: [0140557741](#) by Istvan Banyai, which also works very well in this unit. The book is highly recommended and is available at most major book stores. Students are fascinated by the simple storyline.

Here are some questions from my friend Daria S. to use as the book is presented:

1. Open the book to the first page and ask, “What do you think this is?” (Common answers include “a dinosaur’s back;” “a rooster;” “mountains.”)
2. Slowly turn to the next page so that the students can see if they were correct in their guess.
3. As you continue to page through the book, the students will catch on that this is a picture book that “zooms out” from the picture on the first page. What they don’t realize is where the book is going!
4. Every few pages ask, “Where’s the rooster?” This book changes the audiences’ perspectives so many times that it is helpful to remind them of the picture on the first page.
5. Define perception and explain the books’ relevance to the concept and to the unit.

Day 2 Absolute and Difference Thresholds

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- Ψ explain the process of hearing and its properties
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Procedure: Today is a day to understand two complex ideas called absolute and difference threshold. Use a television and two volunteers (Thanks Alan Feldman) who are turned away from the TV. The students should close their eyes and simply concentrate on the sounds they hear. Begin with the volume on zero. Students should be told as soon as they can hear a sound to raise their hand.

Start with the volume at zero and slowly increase the volume. Record the volume number and when the students raise their hands.

Do this 10 times.

The absolute threshold will be the point where they can hear sound 50% of the time.

For the difference threshold, have the sound turned on but low. Gradually increase the volume until they are sure there was an increase in volume.

Record the starting and ending points.

Do this several times.