4.1: We Experience Our World Through Sensation

Learning Objectives

1. Review and summarize the capacities and limitations of human sensation.
2. Explain the difference between sensation and perception and describe how psychologists measure sensory and difference thresholds.

Sensory Thresholds: What Can We Experience?

Humans possess powerful sensory capacities that allow us to sense the kaleidoscope of sights, sounds, smells, and tastes that surround us. Our eyes detect light energy and our ears pick up sound waves. Our skin senses touch, pressure, hot, and cold. Our tongues react to the molecules of the foods we eat, and our noses detect scents in the air. The human perceptual system is wired for accuracy, and people are exceedingly good at making use of the wide variety of information available to them (Stoffregen & Bardy, 2001).

In many ways our senses are quite remarkable. The human eye can detect the equivalent of a single candle flame burning 30 miles away and can distinguish among more than 300,000 different colors. The human ear can detect sounds as low as 20 hertz (vibrations per second) and as high as 20,000 hertz, and it can hear the tick of a clock about 20 feet away in a quiet room. We can taste a teaspoon of sugar dissolved in 2 gallons of water, and we are able to smell one drop of perfume diffused in a three-room apartment. We can feel the wing of a bee on our cheek dropped from 1 centimeter above (Galanter, 1962).
To get an idea of the range of sounds that the human ear can sense, try testing your hearing here:

http://test-my-hearing.com

**Figure 4.2**

![Image](https://upload.wikimedia.org/wikipedia/commons/thumb/e/e8/Guide_dog.png/240px-Guide_dog.png)

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The dog’s highly sensitive sense of smell comes in useful in searches for missing persons, explosives, foods, and drugs.

Although there is much that we do sense, there is even more that we do not. Dogs, bats, whales, and some rodents all have much better hearing than we do, and many animals have a far richer sense of smell. Birds are able to see the ultraviolet light that we cannot (see Figure 4.3 “Ultraviolet Light and Bird Vision”) and can also sense the pull of the earth’s magnetic field. Cats have an extremely sensitive and sophisticated sense of touch, and they are able to navigate in complete darkness using their whiskers. The fact that different organisms have different sensations is part of their evolutionary adaptation. Each species is adapted to sensing the things that are most important to them, while being blissfully unaware of the things that don’t matter.

**Figure 4.3 Ultraviolet Light and Bird Vision**
Because birds can see ultraviolet light but humans cannot, what looks to us like a plain black bird looks much different to a bird.