Focus Questions

What is the difference between sensation and perception?

What functions does the mind perform during the process of perception?

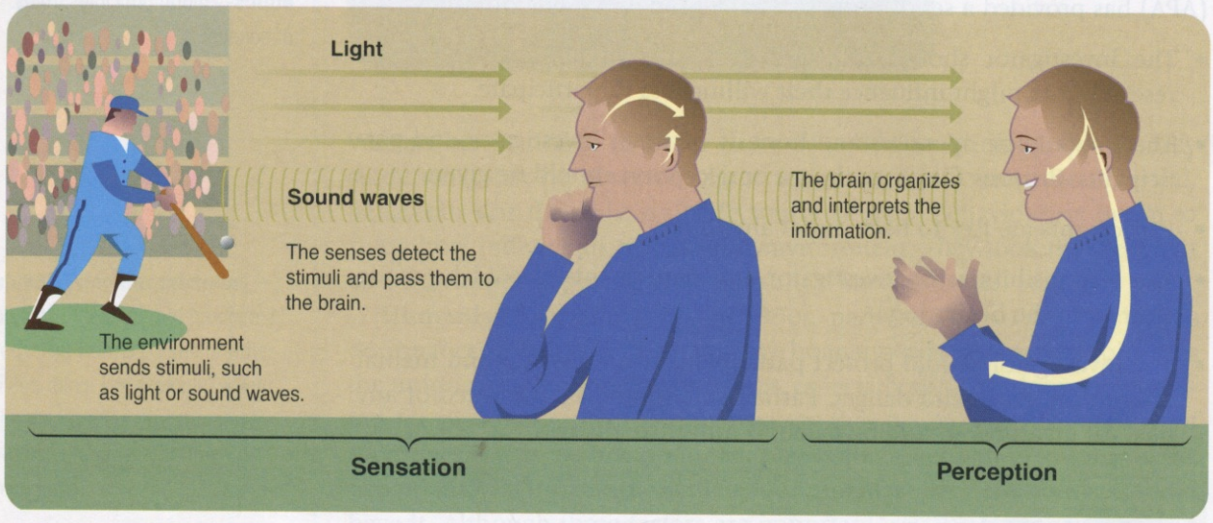
What factors influence perception?

Sensation and Perception

All branches of psychology are concerned with understanding human mental processes. These processes are complex, but we can make them easier to understand by dividing them into two stages. The first stage is **sensation,** the process that activates our sense receptors—sight, hearing, smell, taste and touch—and enables them to transmit signals to the brain. The second stage is **perception**—the process that allows us to select, organize and interpret sensory signals in the brain.

Input from our senses is essential for information to reach the brain. Helen Keller was prevented from acquiring information through sight and hearing, but not through touch. The following case study illustrates how important sensory input is to our ability to learn and relate to the world.

Figure 3–6
Process of sensation and perception



CASE STUDY

1. **How did Helen Keller's disabilities affect her sensation and her perception?**
2. **How did she compensate for these problems?**

Touch and a Strange New Sight

Helen Keller was born bright and healthy. By six months she was imitating words and short phrases. By her first birthday she was walking. Then, on a chilly February day, she contracted scarlet fever. Although she survived the illness, she was left blind and deaf.

For five years, Helen's parents tried to teach her. On her seventh birthday, they hired Anne Sullivan to teach her sign language. Anne tried to help her but became frustrated and discouraged. One day, Anne gave Helen a doll, which Helen threw on the floor. At that point Helen's life took a dramatic turn as she describes in the following passage:

I felt my teacher sweep the fragments to one side of the hearth, and I had a sense of satisfaction that the cause of my discomfort was removed. She brought me my hat, and I knew that I was going out into the warm sunshine.

From *The Story of My Life* by Helen Keller

SOCIAL SCIENCE LIVE

Where Is Your Blind Spot?

The information we receive about the world is filtered through our senses: sight, hearing, smell, taste and touch. But are our senses as reliable as we think? For example, did you know that you have a blind spot in the centre of your eye? This is because there are no receptors to the optic nerve at the point where the retina (which triggers impulses through the optic nerve to the brain) attaches to the eyeball. Try this experiment.

Hold your book an arm's length away from your face. Close your left eye and fixate on the cat in the drawing below. Slowly move the book closer. You should be able to see the dog with your peripheral vision. When the book is about 20 to 25 centimetres away, the dog will disappear. That is because its image falls on the blind spot of your retina. The dog will reappear as you move the book closer or farther away.

This thought, if a wordless sensation may be called a thought, made me hop and skip with pleasure.

We walked down the path to the well-house, attracted by the fragrance of the honeysuckle with which it was covered. Someone was drawing water and my teacher placed my hand under the spout. As the cool stream gushed over one hand, she spelled into the other the word *water*, first slowly, then rapidly. I stood still, my whole attention fixed upon the motions of her fingers. Suddenly I felt a misty consciousness as of something forgotten—a thrill of returning thought; and somehow the mystery of language was revealed to me. I knew then that "w-a-t-e-r" meant the wonderful cool something that was flowing over my hand.

I left the well-house eager to learn. As we returned to the house every object seemed to quiver with life. That was because I saw everything with the strange new sight that had come to me.... It would have been difficult to find a happier child than I was as I lay in my crib at the close of that eventful day and lived over the joys it had brought me, and for the first time longed for a new day to come.

The moment Helen learned to connect the sensation of water with what her teacher was writing in her hand, her world changed. Eventually Helen Keller would graduate from college. As an adult she wrote books and gave speeches all across North America.

Figure 3–7 ▼
Helen Keller (right) worked on behalf of others like herself.

Powerful Processes

threshold—the limit below which a stimulus cannot be perceived or produce a response

In many ways, our powers of sensation are amazing. To illustrate, psychologists have studied the absolute threshold for sensory awareness, that is, the smallest stimulus that we can detect 50 percent of the time. For example, we can

- see a candle flame 50 kilometres away on a clear, dark night
- hear the ticking of a watch worn by someone standing 6 metres away in a quiet room
- taste sweetness in a solution in which one teaspoon of sugar has been dissolved in 7 litres of water
- smell a single drop of perfume diffused in the entire volume of a three-room apartment
- feel the wing of a bee fall upon our cheek from about one centimetre away

Our powers of perception are similarly impressive. A camera, for example, can only reproduce the images in front of the lens; a tape recorder can only record the sound waves travelling to it. In contrast, a human being makes instant and regular decisions about what to pay attention to and what it means. This ability is essential for survival and success. For instance, imagine you are driving along a road, listening to your favourite song on the radio. Suddenly a flash of colour appears in your peripheral vision. You immediately determine that a car is moving into your path. You touch the brakes, swerve and avoid an accident. No machine or computer can sense, perceive and react that quickly.

During the process of perception, the mind performs at least three functions: selecting, organizing and interpreting. Selecting sensation means paying attention to some things in the environment and not to others. For example, loud noises and bright colours are more likely to grab our attention; in a crowded and noisy room, we can pick out our own name from the myriad of other words spoken. Organizing sensation means shaping it into something we understand. The flash of colour in our peripheral vision is organized into a car moving into our path. In interpreting sensation, we decide what the sensation means. In this case, we decide that the car means danger and we should take immediate action.

Figure 3–8
Each species is equipped with sensory powers that enable it to function in the world. When a human and a bee see a flower, they see different things. The human sees the image on the top. The bee, able to receive ultraviolet light better, sees the image on the bottom. The bee can see a "landing strip," which helps it land to gather nectar.

Factors Influencing Perception

Have you ever raved to friends about a great film, only to have them rush out to see it and return disappointed? From the way they describe it, you wonder if you were watching the same film. How can people have such different perceptions of the same movie? The answer lies in the fact that perception is influenced by more than just the object being perceived. For example, your friend may have gone to the movie theatre on a night when the audience was particularly noisy or unresponsive. Or perhaps your

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Reality or Illusion?

An illusion is an object or event that deceives us by giving a false impression. Look at the following perceptual illusions. In each case, consider what factor (the object of perception, the background or the perceiver) creates the illusion.

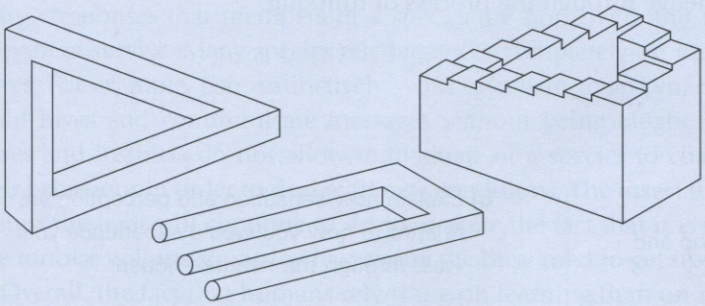

Figure 3–9
What makes these figures impossible? How do we try to make sense of them? ▼

Figure 3–10
Which of the two monsters looks bigger? Now measure them to determine their actual height. What does this exercise tell you about how we perceive things? ▼

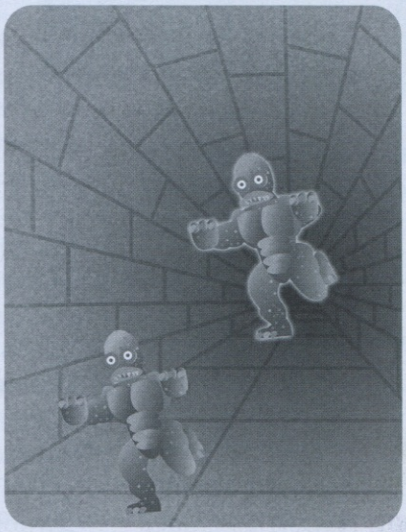

Figure 3–11 ▲
What do you see here, a young woman or an old woman?

◀

Figure 3–12
Look at the picture and then turn it upside down. Notice how your knowledge of facial features misleads you. The eyes and mouth are right-side up on an upside-down face.

friend watched the film at home on a VCR, and the special effects did not look nearly as impressive on the small screen. In addition, what we perceive has a lot to do with our own experiences and particular point of view. Your friend may have thought the main character was unsympathetic because he reminded her of a cousin she dislikes.

In other words, perception is influenced by three factors: the object itself, the background or surroundings, and the experiences and feelings of the person who is perceiving. None of us see the world in exactly the same way.

Connections

How does culture influence perception? (See Chapter 2, page 28.)

Sensation, Perception and Cognition

Sensation and perception are closely connected to learning. We rely on our senses to provide the raw materials the mind must work with. But learning involves more than just gathering sensations. We need to use that data to acquire knowledge. We also have to retain that knowledge in memory so we can apply it again to other situations.

Psychologists use the word **cognition** to describe how we acquire, store and use knowledge. In the following section we will look at how we acquire knowledge through learning. In later sections we will investigate how we store and retrieve information through memory, and how we use our knowledge through the process of thinking.

Activities

Understand Ideas

1. What is the difference between sensation and perception?
2. What three factors influence our perception?

Think and Evaluate

3. **a)** In what ways can human sensation and perception be compared with a video camera? In what ways are they different?
   b) In your own words, explain why human perception is unique and why it is so important.

Apply Your Learning

4. **a)** Imagine yourself walking through a haunted house. Describe the three factors that would influence your perception.
   b) Explain how sensation and perception are related to how you would experience your walk through the haunted house.

Research and Communicate

5. Choose an advertisement for a consumer product from television or in a magazine. Bring your example to class. Analyze the way the advertiser shapes viewer perceptions of the product. Consider how the advertiser presents the object itself as well as the product's surroundings. To what ideas or feelings—from the viewer's point of view—does the advertisement appeal?
6. Using the Internet, find other examples of visual illusions and bring them to class. Explain what the illusion is and analyze its source.

Focus Questions

What is learning?

What are the advantages and costs of our reliance on learning?

Learning

One of the results of organizing the information we collect from our senses is that we learn from our experience. Psychologists define learning as a change in knowledge or behaviour as a result of experience. While this definition may be different from your own concept of learning, its advantage is that it covers a wide range of various kinds of learning.

Most human thought and behaviour is the result of learning. A great deal of learning occurs during the first few years of life, although we continue to learn throughout our lives. Learning takes place in many different ways. We learn in school, of course, but we also learn in everyday encounters with life. For example, think of the difficult skills you learned before