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Behavior as we know it, our own private experience, and the reported experiences of others would be impossible without some way of knowing about the world around us. It is through our senses that we know about the world.

Vision, hearing, taste, smell, and touch are the so-called five senses. But the number of human senses is closer to ten than five. In addition to touch, the skin contains separate warmth, cold, and pain sensors. Furthermore, sense organs in the muscles, tendons, and joints tell us about the position of our limbs and the state of tension in the muscles. They serve the sense called: kinesthesia. The vestibular sense informs us about the movement and stationary position of the head; it is the key sense in maintaining balance.

Each sensory system is a kind of channel, consisting of a sensitive element (the receptor), nerve fibers leading from this receptor to the brain or spinal cord, and the various relay stations and processing areas within the brain. When a sensory channel is stimulated, we have a sensation that is characteristic of that channel. For instance, whether the eye is stimulated by light or by pressure on the eyeball, we have a visual experience.

In order for us to know about the world around (and within) us, physical energy must be changed into activity within the nervous system. The process of converting physical energy into nervous-system activity is called transduction. Transduction occurs at the receptors — cells which are specialised for the most efficient conversion of one kind of energy. In general, during the transduction process, receptor cells convert physical energy into an electric voltage, or potential called the receptor potential. In some sensory systems, the receptor potential itself directly triggers the nerve impulses that travel to the brain or spinal cord.