

Perception

Chris Burley, Lisa K. Lashley, Charles J. Golden

Nova Southeastern University

Perception is the process through which humans are able to select, organize, and interpret sensory input from the external environment. This process of selection, organization, and interpretation of external sensory stimulation results in our internal representation of the outside world, as well as our conscious experience. Through the process of perception, we are able to gain information and knowledge about our environment, allowing us to safely and effectively navigate in the world.

Ultimately, perception is a sequence of processes, beginning with an environmental stimulus, leading to our perception of the stimulus, which may or may not result in a reaction to the stimulus. Environmental stimuli can include anything that we are able to see, hear, touch, smell, taste, or otherwise sense. That being said, it is hard to believe that individuals do not become overwhelmed by the vast amount environmental stimuli that is received at any given point in time. Our ability to attend to certain stimuli is a critical part of filtering out irrelevant information, allowing us to focus on the environmental stimuli that are pertinent to us. For example, consider the cocktail party effect, in which you are at a noisy cocktail party but are able to hear the person next to you without much difficulty, despite the competing sensory input. The cocktail party effect demonstrates the brain's ability to focus attention on pertinent stimuli while filtering out others. Despite the ability to attend to certain stimuli, some environmental stimuli demand attention from the brain. Such stimuli are typically dangerous in nature (i.e., hot stove, bright lights, loud noises), and survival mechanisms within the brain automatically focus attention on stimuli that may pose a threat to our health. Significant errors in behavior can arise from attending to the wrong stimuli.

When a stimulus is given attention, either intentionally or automatically, sensory receptors are the first to process the stimuli. Sensory receptors transform environmental stimuli into electrical energy through a process known as transduction. Once an environmental stimulus is transduced, the electrical signals then undergo neural processing. Depending on the type of signal (i.e., visual, auditory, somatosensory), electrical signals will travel through different pathways in the brain. Electrical signals are transmitted through various complex series of interconnected neural pathways throughout the body. For somatosensory and motor sensations, neural pathways include spinal nerves associated with particular parts of the body. Through these spinal nerves, electrical signals are transmitted from various body locations to the receptor cells in the brain. During these travels, signals are integrated on a subconscious level until they are transmitted to the conscious centers of the brain.

Once the stimulus enters conscious thought, the stimulus is considered to be perceived by the individual. However, when stimuli are perceived it does not guarantee that they will be recognized by the individual. When a stimulus is perceived, it does not mean that the stimulus will be recognized. For example, consider again the cocktail party effect. It is not that the background noise of the party's many conversations does not enter an individual's awareness rather that the individual is aware of the background noise and chooses not to recognize it. Recognizing a stimulus requires that the brain categorizes and interprets what it is that is being sensed. Our ability to interpret stimuli and give them meaning is known as recognition. It is our ability to categorize stimuli into meaningful categories that allows us to understand and react to our external environment. The final step of perceptual process is action. Actions in response to stimuli can involve various motor activities, such as smiling when we see a baby or an attractive stimulus.

Given the critical importance of perception to understanding the world around us, it is a very well-studied area. The two main approaches to perception include the psychophysical approach and the physiological approach. The psychophysical approach measures the relationship between environmental stimuli and behavioral responses. This approach focuses primarily on the environmental stimulus and transduction of the stimulus and their relation to perception, recognition, and action. The physiological approach to perception focuses on the environmental stimulus and transduction and their relation to receptor and neural processes. This approach is more focused on the neuroscience aspects of environmental stimuli and how they are transduced, received, and processed by neurons. However, the two approaches are interdependent on one another to determine the cognitive processes associated with perception. For example, the psychophysical approach determined a deficiency in perceptual performance in identifying oblique contours, which was then corroborated by the physiological approach. As such, both approaches assist each other in identifying how the human brain arrives at perception. Although in normal individuals the perceptual processes are similar, individual differences will result in the creation of unique realities which may differ in small or large wa

Further Reading

Bruce, V., Georgeson, M., & Green, P. (2003). *Visual Perception*. Hove and New York. Psychology Press.

Wolfe, J. (2005). *Sensation Perception*. Sunderland: Sinauer Associates, Incorporated.