

Blindsight is a curious phenomenon defined as “the ability to respond to visual stimuli without consciously perceiving them” (*Oxford Dictionaries*). Scientists have observed that traditional clinical tests for the ability to see do not accurately display what the patient can detect visually. Some blind patients may be able to detect movement, although they cannot identify objects in their blind field. This “residual sight” is not completely understood. It is especially a mystery to the blind person who can only guess the direction of movement of an object without actually seeing the object in their visual field (Sanders, Warrington, Marshall & Wieskrantz, 1974). A study presented in *The New York Times* found that patients with blindsight could even navigate obstacles in their path and detect frightening faces, all without the conscious ability to see these things (Carey, 2008). This recent discovery clues us in to the way vision is processed in the brain. It also makes evident the vast amount of work the brain does without our conscious awareness of it.

In the documentary, *Phantoms In the Brain*, Dr. Ramachandran reports his findings on his studies with a blind patient. The patient, Graham Young, has no vision in his right field of vision but was able to correctly identify which direction a small square moved across a screen within his blind field (“Phantoms in the Brain”). Studying people with blindsight has allowed scientists to understand more of the inner workings of the brain. This has led to much change in our understanding of consciousness. Vision was once assumed to be something we are very aware of, an entirely conscious activity. It is now apparent that vision and consciousness are not as straightforward as they may have seemed. Vision involves a complex system of signaling in the brain. Dr. Ramachandran described two signaling pathways related to sight in the brain.

Damage to the primary visual cortex, which gives a person perceivable sight, may not completely destroy visual processing. One signaling pathway goes to the spinal cord and then to the higher centers in the brain without ever stimulating the visual cortex. Patients with this pathway intact still detect movement but cannot consciously see because the visual cortex is necessary for conscious sight (“Phantoms In The Brain”).

If vision is not entirely conscious and the rudimentary detection of movement is perceived unconsciously, could other senses also have signaling pathways outside of the realm of the conscious mind? How much do we sense without perceiving the sensing? There are many things that even the average, healthy person sees and adjusts for without conscious thought. For example, you can cross a street navigating people, puddles, and vehicles while your thoughts are elsewhere. It seems very possible that other senses, such as smell and hearing, could be partially detected unconsciously. Rather than filling the void in our understanding of consciousness, the discovery of blindsight seems to have widened it. Consciousness is hard to comprehend when we do not know all of the ways in which the brain can act unconsciously.

I am amazed by blindsight and the fact that the brain can interpret stimuli from the environment without effort or awareness from the blind person. It inspires many questions for which we can only make guesses. Why do some activities require consciousness and others do not? What can the brain really do without our conscious knowledge? Why is consciousness necessary at all? If our brains could perform all of its functions without our conscious knowledge, why does it not? What benefit does consciousness give us? Many animals do not have consciousness as we understand it. They function entirely through unconscious processing, responding to stimuli and acting on instinct. Consciousness seems to us a very basic cognitive

process because we could not imagine life without it (and if we could not consciously think, we would not be imagining anything). The development of cognition somewhere in our evolutionary past likely came about because it was evolutionarily favorable for our survival. For example, blindsight tells us that at one point we may have just had the signaling pathway that did not interact with the visual cortex and so allowed us to see only movement. The development of conscious sight afforded us more success and safety in our environment. How consciousness is achieved, however, is still an amazing mystery.

We cannot entirely comprehend the role of the unconscious mind because we are not conscious of its actions. It is hard to grasp just how much the brain processes beneath our awareness. The brain is amazing in its ability to perform conscious and unconscious functions through neurons and chemical and electrical transmission. When we look at the individual function of neurons, it is hard to imagine that together they are the functional units of the brain. Neurons process all the information coming into the central nervous system. Billions of neurons in the brain work together, transmitting signals from neuron to neuron, and allowing all of our cognitive functions to occur. All motor and sensory information as well as cognition are processed in these tiny neurons (Shufflebeam, 2008). Neurons have been studied to determine their exact role in information processing and transmission. However, the incredible complexity of the brain makes me think that even though there are billions of neurons in the brain, they are more than the sum of their parts. Even though damage to a certain region of the brain destroys a predictable brain process (such as damage to the visual cortex resulting in blindness), neurons are so interconnected that they cannot be labeled with a single function. We miss something when we reduce small segments of the brain to one or a few functions. The brain is an incredibly

complex organ and our current understanding is limited. We do not know exactly how the brain operates consciously or unconsciously. We can only surmise the greater purposes of conscious perception and unconsciousness.

Unconscious processing is incredibly important because we cannot possibly be aware of every function of the body and every external stimulus at once. If we had to consciously breathe, that alone would greatly limit our ability to do anything else. If we had to consciously turn on our memories, we could hardly remember anything. We certainly could not live without unconscious processing in the brain but could we function without conscious thought? Conscious thought allows us the plan and strategize. It is the mark of a evolutionarily advanced organism. Without the ability to make choices, we would not be human beings.

A blindsight patient can detect an object even though there is no awareness of the object. Not only did the partial understanding of blindsight lead to a greater understanding of the signally pathways related to sight in the brain, it also helped scientists understand the vast ability of the brain to function without our conscious knowledge. An understanding of blindsight tells us that the brain is an incredible organ that we just do not fully understand right now. The close study of neurons does not lead us to an overall understanding of consciousness nor do we know all the ways in which the brain acts unconsciously. Blindsight is a remarkable finding that allows us to make more educated guesses as to the nature of consciousness.

#### References

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