

Visual skills can be gained after several years of congenital blindness

January 01, 2007

Understanding how the human brain learns to perceive objects is one of the ultimate challenges in neuroscience. In 2003, Pawan Sinha, a professor at the Massachusetts Institute of Technology, launched an initiative with the hopes of shedding some light on the acquisition of visual skills. The goal of his “Project Prakash” is to find, treat, and study congenitally blind children in India. A unique case study that resulted from this project appears in the December 2006 issue of *Psychological Science*.

Dr. Sinha and two graduate students, Yuri Ostrovsky and Aaron Andalman, were introduced to a woman in India who was born blind due to dense congenital cataracts in both eyes. The woman lived as a blind child for 12 years before she received treatment. Now, twenty years after her surgery, the researchers found that she is able to discern between separate objects, determine depth, localize faces amongst a background of natural scenes, and match faces by their identity. This case demonstrated that a person can acquire visual function even after being deprived of sight for an extended period during childhood.

The evidence gathered from this case study presents a scientific alternative to the widely noted “critical period” that the brain undergoes during childhood. The critical period theory asserts that the brain’s learning mechanisms are significantly dependent on early sensory stimulation. Sinha and his colleagues posit that while some aspects of vision, such as acuity, might indeed be subject to critical periods, many other aspects of functional vision might be learnable even at later ages. In other words, perhaps our brain is not as rigid as we think, and its plasticity remains even after several years of compromised sensory experience. The results of this study provide an argument for even late-stage blindness treatments and guide researchers towards an improved understanding of the complexities of the brain.