Dr. Mark Fenske, Ph.D.

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By Xin He

Dr. Mark Fenske was originally interested in psychology and earned a Bachelor of Science from the University of Lethbridge in Canada. His research there was focused on judgment, decision making, and how humans are able to classify visual stimuli. His interest in consciousness and awareness brought him to the University of Waterloo, where he earned both his Masters and doctorate degrees in cognition and perception.

Dr. Fenske's graduate work began with examining the extent of one's unconscious perception. His studies on subliminal perception shifted his interest to the role of attention in both conscious and unconscious perception. What intrigued Dr. Fenske was how humans can voluntarily focus attention on a subject of interest, while also involuntarily letting our attention be captured by a subject. He then began connecting these two ideas of voluntary top-down verses stimulus-driven bottom-up process involved in human emotion. Thus, in another slight shift in focus, Dr. Fenske took a post-doctoral position at the University of Wales, studying the interaction between emotion and attention. His exposure to emerging technologies used in studying the role of the brain in human behavior there introduced him to cognitive neuroscience. He then obtained another post-doctorate position at the Martinos Center at MGH to continue studying cognitive neuroscience and fMRI.

The studies done by Dr. Fenske and his colleagues have concluded that attention and emotion interact strongly with each other. Specifically, he has found that emotional stimuli influence the allocation of visual attention. The reverse case has been shown to be true as well – selective attention has distinct emotional consequences. Dr. Fenske is currently working on finding the precise neural and cognitive mechanisms in the brain that are responsible for these interactions.

In addition, Dr. Fenske is studying visual context and prior experience in the top-down systems of object recognition. Analyzing one's ability to recognize an image (of, say, a birthday cake) involves providing early information about an object (showing the image of a birthday cake once before) as well as contextual associations between the object and related ones (showing images of balloons and presents). By using fMRI and behavioral tests, his research has suggested that both stimuli trigger the top-down system to facilitate the brain's object recognition (in other words, the subject recognizes the birthday cake faster with prior exposure to the itself image and/or related images, than without.)

Researching cognitive neuroscience in MGH and becoming a faculty member of the Harvard Medical School in neuroscience and radiology was certainly not what Dr. Fenske would have predicted to be doing years ago. He had felt fairly certain as an undergraduate that he would concentrate on clinical psychology. However, Dr. Fenske feels no regret for taking such twists and turns, because those changes in interest are what

have opened him up to new opportunities and positions. We should do the same – in general, be curious and stay open for changes, he advises. It is always an option to follow "mainstream pathways" of becoming an engineer or doctor, but for him, the various positions were valuable opportunities to learn new skills. More importantly, they are what make work so fascinating to him. As such, Dr. Fenske suggests we take whatever comes our way and provide ourselves with diverse environments to work in, so that we may ultimately "stay true to [ourselves], and follow [our] own interests."

Dr. Fenske's Publications - *http://barlab.mgh.harvard.edu/fenske.htm*

McGovern Institute for Brain Research at MIT
FMRI and brain research -
http://web.mit.edu/mcgovern/html/Areas_of_Research/fmri_and_the_brain.shtml
Cognitive neuroscience -
http://web.mit.edu/mcgovern/html/Areas_of_Research/cognitive_neuroscience.shtml
Visual perception and cognition in Kanwisher lab -
http://web.mit.edu/bcs/nklab/research.shtml
Visual NeuroCognition Lab at MGH - *http://barlab.mgh.harvard.edu/index.htm*

MIT OCW Cognitive Neuroscience course - *http://ocw.mit.edu/OcwWeb/Brain-and-Cognitive-Sciences/9-10Spring-2004/CourseHome/index.htm*

"Cortical manifestations of context-related facilitation of visual object recognition" in *Journal of Vision - http://journalofvision.org/5/8/852/*