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The Images Aren't Really There, But Answers Might Be

An Interview with **Jennifer Steeves**, Vision Neuroscientist, York University
York University, Vision: Science to Applications (VISTA)

In my laboratory we study how the brain processes the visual world around us, how we recognize objects and scenes and faces. Mapping the parts of the brain that process these different visual image categories, we have done work with patients who have specific brain damage. With non-invasive brain stimulation from transcranial magnetic stimulation, or TMS, we can transiently apply neural noise and disrupt discrete regions of the cortex that process visual information and then we can learn about the networks that process our visual world.

What's something that you're working on right now?

Now what we're trying to do is mitigate another visual disorder, and this disorder is called Charles Bonnet Syndrome. And Charles Bonnet Syndrome happens secondary to age-related macular degeneration or glaucoma, where individuals are losing their vision but they're hallucinating visual images. Often people see things like textures or faces or objects that aren't actually there. What's actually happening is, there's less input to the visual parts of the brain but the visual brain is still active, and so that's creating these visual hallucinations. And so we're hoping to bring these individuals into the lab to target those regions of hyperactivation and rebalance the activity in the visual cortex, so that they will no longer perceive these visual hallucinations.

What is the future promise of your research?

What I'm trying to do in the shorter term is to quantify these brain changes, and I think once we have a better understanding of the protocols that we need to do, we'll have a better ability to treat disorders like depression, schizophrenia, other disorders where we know that there are imbalances across the brain and brain activity.