When Seeing Isn't Believing: Charles Bonnet Syndrome

Cheryl Murphy August 9, 2012

Liliputs and little people, cartoon characters dancing on your desk, a civil war soldier in your living room, a zebra walking down the street. Typically not what we'd expect to see with our own eyes. But for some, it happens almost every day...for a year or so anyway.

My mind is playing tricks on me

The "visions" aren't always complex or bizarre. Sometimes they can "blend in" to our everyday lives a bit more. One case study was recently published in the Canadian Journal of Ophthalmology described a patient having visual hallucinations of small children popping up in her vision. She didn't try to speak or interact with them in any way and they never spoke to her. She didn't recognize them. She knew that they weren't real and she wasn't frightened of them but there they were. She saw them. Why?

It turns out she had Charles Bonnet Syndrome, a condition in which visual hallucinations are caused by recent visual field loss... and, in her case, a brain tumor.

People who have suffered newly acquired vision loss from eye conditions such as macular degeneration, diabetic retinopathy or cataracts (or from damage to other parts of the visual pathway in the brain) can have new visual field defects as a result and sometimes they begin to "see" things that really aren't there. These people have no prior history of dementia or cognitive impairment, have never had any hallucinations in the past and are not taking medications known to have hallucinations as one of their side effects. Typically, no other sense (taste, touch, smell, or hearing) is affected in Charles Bonnet Syndrome other than sight. It can affect the young as well as the old in that there have been cases of Charles Bonnet Syndrome reported in young children who suffered vision loss from retinopathy of prematurity. In some cases, the vision loss is only to a part of their whole field of vision and their vision can sometimes remain as sharp as 20/40.

In the rare case of the brain tumor I described above, the woman's visual hallucinations resulted from bilateral temporal visual field defects due to the compression of the optic nerves at the optic chiasm by a pituitary adenoma. The hallucinations were a result of her brain trying to make up for the newly acquired missing pieces in its vision and the hallucinations soon vanished after a surgical resection of the pituitary adenoma was performed.

Charles Bonnet Syndrome (CBS) was first described over 250 years ago by, you guessed it, Charles Bonnet, a swiss philosopher, scientist and writer who "wrote about his grandfather's experiences after his grandfather lost his sight to cataracts and began having 'visions' - he could see patterns, people, birds and buildings, which were not really there."

It seems as though, when a puzzle piece of their vision goes missing due to an

damage caused by eye disease or illness, the brain becomes hyperactive and tries to compensate for the missing area by displaying images it has stored over the years. For some, the images are of small children, faces, animated figures, people dressed in clothes from different eras or animals. The images can be distorted greatly in size and therefore are almost immediately deemed as "not real" by the mind of the observer. Still, they are present. They tend to occur most when the person is in a very calm, dim, non-stimulating environment such as when they are sitting alone or watching tv at night. Those afflicted typically report that they are not scared of these visions, but they do sometimes keep them to themselves for fear others might look upon their hallucinations as a sign that they are in the beginning stages of some sort of mental illness or cognitive decline which is not the case.

Charles Bonnet

Let's face it, the brain is just very good at actively filling in missing puzzle pieces of your vision much like it has your whole life with your eyes' own natural blind spot. The blind spot is caused by a lack of photoreceptors overlying the optic nerve, the area on the inside the eye comprised of retinal nerve fibers that exit the eye transmitting the information of what you are seeing to the brain. Since there are no photoreceptors in this area of the eye, what ever image falls on the blind spot is not seen. However, the blind spot is a small, long-standing visual field defect and our brain is pretty used to it being there. It is very good at filling in that little missing spot in our vision

using context clues and colors from the surrounding adjacent visual field thereby making the defect virtually undetectable and not noticeable to us in our everyday lives.

You can however consciously find your eye's natural blind spot by doing the following demonstration.

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Look at the above image. Close your right eye. With your left eye, look at the plus sign. Position your head about 20 inches from your computer monitor. While keeping your left eye on the plus sign, slowly move your head forward until the black dot on the left disappears from your peripheral vision.

See how your brain quickly filled that area in with white based on the white background surrounding the black dot? Pretty neat.

Feel free to try the other eye. For that, close your left eye. With your right eye, look at the black dot. Again, position your head about 20 inches away from your computer screen. While keeping your right eye on the black dot, slowly move your head forward. The plus sign on the right will disappear from your peripheral vision when you reach a certain viewing distance.

The hallucinations associated with recent visual field loss due to retinal damage or other eye disease process are temporary, lasting up to a year at most. It seems once the brain becomes accustomed to the newly acquired visual field loss or change, it stops trying to compensate for the empty visual space with the extraordinary images and the hallucinations subside. People can also try to minimize the frequency of the illusions by having adequate room illumination and staying as active and as social as possible. There are

even eye movement techniques that can be used to help the unwanted images fade away. Some say repeated blinking or looking from side to side will cause the image to disappear. Talking with their friends, family members and doctors can help people with CBS cope with the stress and confusion of having these visual hallucinations and also aid them in discovering the underlying causes of their vision loss if they are not known already. People who are experiencing "strange visions" shouldn't feel afraid to speak up and tell others.

To hear the fascinating Oliver Sacks speak of experiences with his own patients who have Charles Bonnet Syndrome and his own abstract visual hallucinations and vision loss, watch his fantastic TED talk on the subject.

It is indeed truly amazing "what hallucination reveals about our minds."

References:

Hashemi N, Zhang J, Gelman R, Lee AG. Visual hallucinations (Charles Bonnet syndrome) as the presenting sign of pituitary adenoma. *Can J Ophthalmol*. 2012 Jun;47(3):e5-6. Epub 2012 May 1. PMID: 22687320

TED. TED TALKS: "Oliver Sacks: What hallucination reveals about our minds" [video] Sept 2009. Web. Accessed Aug 2012.

Yacoub R, Ferrucci, S. Charles Bonnet Syndrome. *Optometry- Journal of the American Optometric Association*. 2011 Jul; 82(7):p421-427. http://dx.doi.org/10.1016/j.optm.2010.11.014

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