WHAT IS THE RESEARCH ABOUT?

- Visual snow syndrome (VSS) is a complex and mysterious neurological condition. The hallmark symptom that people with VSS see the world through an overlay of moving dots throughout their entire field of vision. VSS is referred to as a syndrome because there are many visual and non-visual symptoms. Symptoms range from tolerable to life altering.
- People with this syndrome experience these symptoms all the time, every day irrespective of whether their eyes are open or closed.
- At present, the cause, areas of the brain affected or how to treat visual snow syndrome is unknown.
- The diverse range of visual symptoms suggests that the syndrome may be caused by a unique processing error as the brain relays visual information.
- Therefore, studying the precise point in which visual processing is affected in the brain can be helpful in understanding the condition. It also informs further investigations to find out what causes visual snow syndrome. We can do this by activating the ocular motor network using key tasks.

Key definitions or terms

1. **Visual processing** - the acquiring and transmission of visual information from the eyes, with the integration and interpretation of this information into a meaningful image to move the eyes or head.
2. **Ocular motor network** - the system responsible for moving the eyes or to maintain a stable visual image.

WHAT DO THE RESEARCHERS DO?

- We observed visual processing in a group of people diagnosed with visual snow syndrome (in total 64 people) and compared them with a group of healthy people (in total 23) by studying the ocular motor network.

WHAT DID THE RESEARCHERS FIND?

- We used three validated and distinct ocular motor tasks (e.g. a prosaccade, an antisaccade and an interleaved antisaccade-prosaccade), each of which placed different demands on the ocular motor network, allowing us to illustrate the types of visual processing changes occurring in people with the condition.

WHAT DO THESE FINDINGS MEAN?

- This indicates that these visual processing changes are not a consequence of a disruption to the decision making centres of the brain.
- Rather, people with VSS appear to be processing visual stimuli more quickly than healthy people, leading to hyper-accelerated eye movements to visual stimuli.

**WHAT DID THE RESEARCHERS FIND?**

- We found that the basic execution of an eye movement towards a suddenly appearing stimulus in the visual field occurred faster in people with visual snow syndrome than in healthy people.

- And when people with visual snow syndrome were asked to perform the opposite action, i.e. prevent an eye movement towards a suddenly appearing stimulus, they were more likely to erroneously move their eyes towards the stimulus.

- Interestingly, when the level of difficulty of a task was increased (i.e. requiring increased demands on central-cognitive executive visual processing), neither the faster eye movement response nor the proportion of erroneous eye movements changed.

**WHAT DO THESE FINDINGS MEAN?**

- Research indicates a possible first-ever, science based diagnosis for VSS.
- This can be measured objectively using simple ocular motor tasks.
- The changes seen in people with VSS indicates that their attention when filtering visual information may be affected and be a contributing factor.

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This summary can be found here: https://bit.ly/32P31dI

References